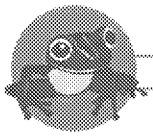

CENTER for BIOLOGICAL DIVERSITY Because life is good.

Via Federal Express

July 26, 2018

David Albright
U.S. EPA, Region 9
Manager, Drinking Water Protection Section, WTR-3-2
75 Hawthorne Street
San Francisco, CA 94105
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Re: Proposed Arroyo Grande oil field aquifer exemption: request for denial of exemption or notice for public comment period

On February 8, 2016, the Department of Conservation, Division of Oil, Gas and Geothermal Resources (DOGGR) submitted a recommendation to expand the areal extent of an aquifer exemption in the Arroyo Grande oil field (AGOF) for Class II injection wells, for which approval is still pending.[1] The AGOF is operated by Freeport McMoRan (FMOG). According to the Safe Drinking Water Act (SDWA) and regulations, the EPA must approve this exemption before it is valid.[2]

On February 11, 2016, the Center sent a letter to EPA Headquarters to request Federal Register publication and a formal notice and comment period, as well as a public hearing, for the AGOF aquifer exemption.[3] The Center laid out the factual basis by reason of which AGOF exemption requires EPA to follow the formal rulemaking process outlined in 40 C.F.R. section 145.32. The Center has since written several letters to EPA Region 9 urging EPA to reject the AGOF aquifer exemption request.[4]

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[1] DOGGR, California State Water Resources Control Board (Water Board), Aquifer Exemption Application Status (2018), http://www.conservation.ca.gov/dog/Documents/Aquifer%20Exemptions/AE_Status_Update_Website_05-07-18.pdf.

[2] 40 C.F.R. § 144.7(a)(2).

[3] See Center for Biological Diversity, letter from Maya Golden-Krasner, Center for Biological Diversity, to Bruce Kobelski, Office of Groundwater and Drinking Water, EPA re: Proposed AGOF Aquifer Exemption: Request for Formal Rulemaking (Feb. 11, 2016), attached and incorporated herein.

[4] See attached and incorporated herein: Center for Biological Diversity, letter from Maya Golden-Krasner, Center for Biological Diversity, to David Albright, Manager, Drinking Water Protection Section, EPA re: Proposed AGOF Aquifer Exemption: Request for Denial (Feb. 25, 2016); Center for Biological Diversity, Supplemental Letter from Maya Golden-Krasner, Center for Biological Diversity, to David Albright and Michael Montgomery, EPA re:

The Center reiterates that this AGOF aquifer exemption request should be denied and that, at the very least, EPA should provide public notice and a comment period for this exemption. The procedures set forth in 40 C.F.R. section 145.32(b)(2) state that "all requests for expansions to the areal extent of Class II enhanced oil recovery . . . must be treated as substantial program revisions.[5] "Whenever EPA determines a proposed program revision is substantial, EPA shall issue public notice and provide an opportunity to comment for a period of at least 30 days."[6] To the best of Center for Biological Diversity's (Center's) knowledge, EPA has not published a notice inviting public comment for *any* substantial modifications to existing UICs in California, including for the proposed revision to the Arroyo Grande oil field aquifer exemption (AGOF). Therefore, EPA must follow the formal notice and comment procedures required by 40 C.F.R. section 145.32.

Additionally, the Center requests that the EPA consider, when deciding on this exemption, that facilitating increased oil drilling severely hinders the state and federal climate goals.

I. Background

The SDWA protects the nation's public drinking water supplies, which is becoming an increasingly more precious resource for a frequently drought-ridden California. Underground sources of drinking water are presumed protected unless exempted.[7] The protective duties under the SDWA are carried out either by the EPA or states that have been given primacy. In 1983, the state of California was granted primacy with respect to Class II injection under provisions of the state Public Resources Code and the federal SWDA.[8]

DOGGR carries out California's Underground Injection Control (UIC) program. SDWA regulations allow the EPA to exempt aquifers that currently do not serve as a source of drinking water from the protection of the SDWA, as long as they meet the exemptions set forth in 40

Proposed AGOF Aquifer Exemption: Request for Denial (March 9, 2016) (regarding need to conduct NEPA review on this decision); Center for Biological Diversity, letter from Jean Su, Center for Biological Diversity, to David Albright and Michael Montgomery, EPA re: Proposed AGOF Aquifer Exemption: Endangered Species Act Compliance (May 6, 2016); DOGGR, Letter from DOGGR Re: AGOF Aquifer Exemption (August 18, 2016); Center for Biological Diversity, Letter from Maya Golden-Krasner, Center for Biological Diversity, to David Albright, Michael Montgomery, Bruce Kobelski, EPA re: Supplemental Information (Oct. 11, 2016).

[5] 40 C.F.R. § 145.32(b)(2).

[6] *Id.*

[7] 40 C.F.R. § 144.7(a); 42 U.S.C. § 300h(d)(2).

[8] DOGGR, Oil, Gas & Geothermal- Injection Wells, http://www.conservation.ca.gov/dog/general_information/Pages/class_injection_wells.aspx (accessed July 25, 2018)

C.F.R. section 146.4.[9] If a revision or aquifer exemption is "substantial," the change must be published as a notice in the Federal Register with a thirty-day comment period.[10] *All requests for expansions to the areal extent of Class II wells must be treated as substantial program revisions.*[11]

If the state initiates a program revision, it shall keep EPA fully informed of any proposed modifications to its basic statutory or regulatory authority, its forms, procedures, or priorities.[12] In California, DOGGR first reviews and confirms the technical information and supporting data of a proposal for an aquifer exemption.[13] It then sends the application to the California State Water Resources Control Board (SWRCB) for a review and consultation process.[14] Upon the SWRCB's concurrence that an aquifer or portion of an aquifer may merit consideration for exemption by the EPA, DOGGR and SWRCB shall provide a public comment period with a minimum of thirty days public notice, and jointly conduct a public hearing.[15] Following review of the public comments, the division shall then submit the aquifer exemption proposal to the EPA.[16] These procedures are set out in state law.[17]

DOGGR's oversight of the UIC program has been incredibly poor. In November of 2015 DOGGR acknowledged, and advised EPA, that ten of the eleven aquifers DOGGR has historically treated as exempt do not meet the federal regulatory criteria for exemption from the SDWA.[18] In direct violation of both the California Primacy Agreement and the terms of the SDWA, DOGGR permitted up to 5,625 potentially unlawful Class II injection wells to inject

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[9] US EPA, Underground Injection Control (UIC), Aquifer Exemptions in the Underground Injection Control Program, https://www.epa.gov/uic/aquifer-exemptions-underground-injection-control-program#Infor (accessed July 25, 2018)

[10] 40 C.F.R. § 145.32(b)(2).

[11] *Id*, emphasis added. *See also* US EPA, Guidance for Review and Approval of State Underground Injection Control (UIC) Programs and Revisions to Approved State Programs, GWPB Guidance #34 at 5 (1984), http://www.conservation.ca.gov/dog/general_information/Documents/Aquifer%20Exemption%20Guidance%2034.pdf (" Guidance Document") (stating that while regulations do not define "substantial" beyond what is written in 40 C.F.R. § 145.32(b)(2), the EPA has indicated that aquifer exemptions for Class II wells are "substantial" if (1) the water in the aquifer has less than 3,000 mg/l total dissolved solids (tds) which is not related to action on a permit, except in the case of enhanced recovery operations authorized by rule). Here, the exemption is not related to action on a permit and TDS is below 3,000 TDS in some places, so it is not exempt from being a "substantial" modification.

[12] 40 C.F.R. § 145.32(a).

[13] Cal. Pub. Resources Code § 3131(a), *see also* DOGGR, Aquifer Exemption Information, Aquifer Exemption Review Process (2017), ftp://ftp.consrv.ca.gov/pub/oil/Aquifer_Exemptions/General_Info/Aquifer_Exemption_Review_Process.pdf. ("Review Process")

[14] *Id.*

[15] Cal. Pub. Resources Code § 3131(b); *see also* Review Process.

[16] Cal. Pub. Resources Code § 3131(c); *see also* Review Process.

[17] [17] Cal. Pub. Resources Code § 3131.

[18] DOGGR, Aquifer Exemption Information, http://www.conservation.ca.gov/dog/Pages/Aquifer_Exemptions.aspx (accessed July 25, 2018).

waste water, steam, chemicals, and other pollutants into non-exempt aquifers.[19] These include ninety wells at the AGOF: fourteen waste disposal wells and seventy-six enhanced oil recovery wells that primarily injected steam underground, sometimes at high volumes. FMOG and state regulators request this exemption for AGOF to both legitimize their illegal injections, as well as accommodate a planned massive expansion of production, which will involve the drilling of an additional 350 wells, including new Class II injection wells.

With regards to California, EPA has not published *any* public notices regarding aquifer exemptions in the Federal Register. For the nation overall, the last time it published a notice inviting public comment on an aquifer exemption was on January 30, 2001 for an aquifer in Wyoming.[20] This means that, to our knowledge, EPA has not published a notice inviting public comment for any aquifer exemptions in California, including for the AGOF aquifer exemption.

The Center and AGOF's neighbors are concerned that aquifers currently or potentially used for drinking water will be harmed by the exemption. The Center is aware that many of these people have also requested a formal notice and comment period from EPA.[21] If the exemption request for the AGOF operators is granted by the EPA, operators will inject into an expanded area of the underlying aquifer beyond that in which they have been illegally injecting for decades. DOGGR asserts this injection will not affect the quality of water that is, or could reasonably be, used for any beneficial use, and that the injected fluid will remain in the proposed exempted aquifer because the aquifer is zonally isolated.[22] However, neighbors of the AGOF and an expert hydrogeologist have submitted comments disputing the basis for these claims.[23]

The Center has already formally requested that the EPA comply with the procedures outlined in 40 C.F.R. section 145.32, but has received no formal response to date. The Center is concerned, however, that EPA will not be publishing a public notice or providing a comment period for the proposed expansion to the AGOF aquifer exemption.

The Center has also previously requested that the EPA reject the proposal of the AGOF aquifer exemption, and continues to firmly insist upon that rejection. In the alternative, the

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[19] Letter from Steve Bohlen, State Oil and Gas Supervisor, DOGGR, and Jonathan Bishop, Chief Deputy Director, State Water Resources Control Board, to Michael Montgomery, U.S. EPA (July 31, 2015) ("July 31, 2015 letter"), p.1.

[20] US EPA, Underground Injection Control Program: Substantial Modification to an Existing State-Administered Underground Injection Control Program (66 Fed Reg 8234) Jan. 30, 2001.

[21] 40 C.F.R. § 145.32 states that the public notice must provide an opportunity for a public hearing and that "[s]uch a hearing will be held if there is significant public interest based on requests received."

[22] Statement of Basis; California Pub. Resources Code § 3131.

[23] *See* Supplemental AE Comments, pp 16-20; Hagemann, Matt, Comments on the Arroyo Grande Aquifer Exemption Response to Comments (Feb 12, 2016); and Smith-Risner, Natalie, Proposed Aquifer Exemption, letter to DOGGR (Dec. 16, 2015). *See also* Hess, Rob, Cross section map showing location of water well adjacent to proposed aquifer exemption zone Hesse (Dec.16, 2015) and Hesse, Rob, Aerial Image Overlay Showing Results of CBD's Public Records Act Request for Well Information (Feb. 10, 2016).

Center urgently requests that the EPA issue a public notice and comment period before approving the AGOF aquifer exemption for the reasons stated in the Center's February 11, 2016 letter, and because the aquifer exemption is a "substantial" revision to California's UIC program according to 40 C.F.R. section 145.32(b)(2), and is therefore required under the statute and the Administrative Procedure Act[24] to follow the formal rulemaking procedures outlined in the SDWA regulation. This is so regardless of a similar review process prescribed by the State of California.

II. The Proposed Revision to the Aquifer Exemption is Substantial

The federal regulations require that "[a]ll requests for expansions to the areal extent of Class II enhanced oil recovery . . . must be treated as substantial program revisions."[25] Since the AGOF proposal is expanding the areal extent of the aquifer to add 350 new wells that include new Class II injection wells, it plainly qualifies as a substantial program revision.[26] Since the approval of the aquifer exemption would be a substantial revision, EPA must comply with 40 C.F.R. section 145.32 and issue a public notice and provide an opportunity for public comment for a period of at least 30 days.

III. EPA is Required to Issue a Public Notice and Comment Before Approving the AGOF Aquifer Exemption as Prescribed by 40 C.F.R. Section 145.32, Regardless of a Similar Review Process set forth in the State of California's Public Resources Code

While DOGGR published a notice for a thirty-day comment period on August 20, 2015, as well as a fifteen-day supplemental public comment period on December 8, 2017 for the proposed AGOF aquifer exemption, [27] California's similar yet separate review process set forth

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[24] 5 U.S.C. § 706.

[25] 40 C.F.R. 145.32(b)(2).

[26] Additionally, the AGOF aquifer exemption meets the criteria for "substantial" revisions because the water quality in this aquifer is well below 3,000 mg/l tds, and is as low as 1,000 mg/l in some regions. *See, e.g.*, Freeport-McMoRan, Application for Aquifer Exemption, Arroyo Grande Oil Field (2015) ("Aquifer Exemption Application"), ftp://ftp.consrv.ca.gov/pub/oil/Aquifer_Exemptions/County/San_Luis_Obispo/Arroyo_Grande_Oilfield/Dollie_Sands_Pismo_Formation/Arroyo Grande Oilfield Edna Member Dollie Sands Pismo For mation Aquifer Exemption Application.pdf at page 20. *See also*, Aquifer Exemption Application, Appendix D 1-a, ftp://ftp.consrv.ca.gov/pub/oil/Aquifer_Exemptions/County/San_Luis_Obispo/Arroyo_Grande_Oilfield/Dollie_Sands_Pismo_Formation/Arroyo%20Grande%20Oilfield%20Edna%20Member%20Dollie%20Sands%20Pismo%20Formation%20Aquifer%20Exemption%20Application%20Appendices.pdf.

[27] DOGGR, Notice of Proposed Aquifer Exemption (Aug. 20, 2015), ftp://ftp.consrv.ca.gov/pub/oil/Aquifer_Exemptions/County/San_Luis_Obispo/Arroyo_Grande_Oilfield/Dollie_Sands_Pismo_Formation/Notices%20and%20Documents/Arroyo%20Grande%20AE%20Hearing%20Notice.pdf, and DOGGR, Notice of Proposed Aquifer Exemption, (Dec. 8, 2017), ftp://ftp.consrv.ca.gov/pub/oil/Aquifer_Exemptions/County/San_Luis_Obispo/Arroyo_Grande_Oilfield/Dollie_Sands_Pismo_Formation/December2017/Public_Notice_December_2017.pdf.

in the California Public Resources Code[28] does not exempt EPA from its federally mandated duty to publish a notice in the Federal Register inviting public comment.

First, the federal regulations designate EPA as the agency responsible for publishing public notice in the Federal Register.[29] 40 C.F.R. section 145.32(b)(2) states that "[w]henever *EPA* determines a proposed program revision is substantial, *EPA shall* issue public notice and provide an opportunity to comment for a period of at least [thirty] days," (emphasis added).

Second, nothing in the Code or other official documents suggests that EPA's task to give notice for public comment may be, or has been, delegated to California state agencies, whereas other sections of the Code indicate instances where EPA *has* delegated other tasks to the state.[30] Section 144.7, for example, specifically states that "the Director" has the authority to identify and protect underground sources of drinking water and exempted aquifers.[31] Section 144.3 defines "Director" as the Regional Administrator (when, unlike here, there is no approved State or Tribal program), the State director or the Tribal director (when there is an approved State or Tribal program).[32] In section 145.32, however, EPA (and EPA only) is specifically tasked with determining the proposed program revision as substantial and issuing public notice and providing an opportunity to comment for at least 30 days.

Finally, a memorandum from the Director of the Office of Drinking Water addressed to the Water Division Directions of Region IX of the EPA notes that the approval of substantial program revisions are a "rulemaking and *cannot be delegated by the Administrator* under the Safe Drinking Water Act."[33] Since EPA is responsible for the federal rulemaking, it must provide notice *in the Federal Register* and cannot delegate this task to the State. In fact, the only time the State is mentioned in 40 C.F.R. section 145.32 is when it is tasked with the duty to submit a modified program description or other such documents as EPA determines necessary.[34]

It is thus apparent that EPA knows how to delegate a task to a state, as evidenced by section 144.7, or to reserve its authority, as evidenced by the memorandum to Region IX of the EPA. The use of "EPA" instead of "Director" or "State" in section 145.32 therefore clearly

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[28] Cal. Pub. Resources Code § 3131.

[29] *See, e.g.*, 40 C.F.R. § 123.61 ("After determining that a State program submission is complete, *EPA* shall publish notice of the State's application in the FEDERAL REGISTER . . .")(emphasis added), *and* 40 C.F.R. § 123.62(b)(2) ("Whenever *EPA* determines that the proposed program revision is substantial, *EPA shall* issue public notice and provide an opportunity to comment for a period of at least 30 days.") (emphasis added), *and* 40 C.F.R. §123.62(b)(4)("A program revision shall become effective upon the approval of the Administrator. Notice of approval of any substantial revision shall be published in the FEDERAL REGISTER.").

[30] *See, e.g.*, DOGGR, Important Note Regarding The Memoranda of Agreement On Primacy and Exempted Aquifers (Feb. 6, 2015), http://www.conservation.ca.gov/dog/for_operators/Documents/MOU-MOA/MOA_EPA_UIC_1982.pdf, *and* Guidance Document, *supra* note 10.

[31] 40 C.F.R. § 144.7(a).

[32] 40 C.F.R. § 144.3.

[33] Guidance Document, *supra* note 11, at 1 (emphasis added).

[34] 40 C.F.R. § 145.32(b)(1).

demonstrates that the duty to publish public notice in the Federal Register and provide opportunity for comment remains with EPA. EPA cannot delegate the task of issuing a public notice and opportunity for comment before approving an aquifer exemption to states that have been given primacy as a convenient substitute for its own obligations. Furthermore, the regulations require a notice to be published in the Federal Register, which is something that only a Federal Agency can do. EPA must follow the procedures in section 145.32(b), regardless of what California agencies have already done.

IV. Facilitating Increased Oil Drilling Hinders the State and Federal Climate Goals

Immediate and aggressive greenhouse gas emissions reductions are necessary to keep warming well below 2°C rise above pre-industrial levels – the temperature rise beyond which the most catastrophic effects of climate change are projected to occur.

The emission reduction potential in California alone is staggering. In February 2018, the Stockholm Environment Institute released a study concluding that restricting California oil production by 100 million barrels/year would likely decrease global GHG emissions by 8 to 24 million tons CO_2/year.[35] Overall emission benefits may be even greater if one factors in the upstream GHG emissions associated with producing, transporting, and processing that oil.[36]

Similarly, an Oil Change Institute report released in May 2018 found that halting new oil well permits and phasing out wells within 2,500 feet of sensitive areas – a distance within which public health studies suggest the greatest exposure to toxic air pollution occurs – could keep 660 million barrels of oil in the ground from 2019 to 2030.[37] If extracted and burned, this oil would release more than 425 million metric tons of carbon pollution over the same time period.[38] As a point of comparison, Governor Brown set a goal to reduce oil use in cars and trucks by 40 percent by 2030, which save about 430 million barrels of oil over the next 12 years.[39] So, if California does not limit production, it could add more oil supply to the market than its demand-side measures reduces.[40]

Further, both of these studies found that reducing production in California would *not* result in an equal import of oil from other states or countries. Rather, reducing production locally results in a net reduction of overall oil produced. The Stockholm Environment Institute, for

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[35] Erickson, Peter & Michael Lazarus, Stockholm Env. Institute, How limiting oil production could help California meet its climate goals (Feb. 27, 2018) ("SEI Report") at p. 3.
[36] *Id.*
[37] Oil Change International, The Sky's Limit California: Why the Paris Climate Goals Demand that California Lead in a Managed Decline of Oil Extraction (May 2018), at p. 8
[38] *Id.*
[39] *Id.*
[40] *Id.*

instance, confirmed that every barrel of California oil left in the ground will result in a net decrease of about half a barrel of oil consumption globally.[41]

It is clear that this exemption request is intended to facilitate a major expansion of the Arroyo Grande oil field by sacrificing our groundwater and the safety of nearby residents to the oil industry. In addition, the urgent need to prevent the worst impacts of climate change means that California cannot afford to facilitate new drilling and infrastructure that locks in carbon intensive oil production for years into the future. As a result, we urge EPA to reject this aquifer exemption request, or at the very least fulfill its congressionally mandated duties set in 40 C.F.R. section 145.32.

V. Conclusion

EPA should ultimately reject the request for a proposed expansion to the AGOF aquifer exemption. At the very least, EPA must publish a notice on the Federal Register for a thirty day comment period before approving the program revision, as is required by 40 C.F.R. section 145.32. Thank you for your consideration.

Sincerely,

/s/_____
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/s/_____
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Encl.

Center for Biological Diversity, letter from Maya Golden-Krasner, Center for Biological Diversity, to Bruce Kobelski, Office of Groundwater and Drinking Water, EPA re:

[41] SEI Report.

Proposed AGOF Aquifer Exemption: Request for Formal Rulemaking (Feb. 11, 2016)

Center for Biological Diversity, letter from Maya Golden-Krasner, Center for Biological Diversity, to David Albright, Manager, Drinking Water Protection Section, EPA re: Proposed AGOF Aquifer Exemption: Request for Denial (Feb. 25, 2016)

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Freeport-McMoRan, Application for Aquifer Exemption, Arroyo Grande Oil Field (2015)

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Hess, Rob, Cross section map showing location of water well adjacent to proposed aquifer exemption zone (Dec.16, 2015)

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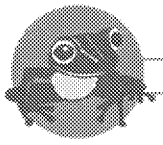
U.S. Environmental Protection Agency, Underground Injection Control Program: Substantial Modification to an Existing State-Administered Underground Injection Control Program (66 Fed Reg 8234) Jan. 30, 2001



CENTER for BIOLOGICAL DIVERSITY *Because life is good.*

February 11, 2016

Via email and FedEx

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Re: Proposed Arroyo Grande oil field aquifer exemption; request for formal rulemaking

On February 8, 2016 the California Department of Conservation, Division of Oil, Gas and Geothermal Resources ("DOGGR") recommended an aquifer exemption for Class II injection wells in the Arroyo Grande oil field ("AGOF"), operated by Freeport McMoRan ("FMOG"). Under the Safe Drinking Water Act ("SDWA"), the EPA must approve this exemption before it is valid.[1] Some aquifer exemptions are subject to formal rulemaking – that

[1] 40 C.F.R. § 144.7(a)(2).

is, notice in the Federal Register and an opportunity for public comment.[2] The Center for Biological Diversity ("CBD" or "Center") writes to request Federal Register publication and formal notice and comment period, as well as a public hearing, for the AGOF aquifer exemption.[3]

I. Background

The SDWA is an important safeguard for our nation's drinking water, a precious resource. Water is presumed protected unless exempted.[4] The EPA may not approve an aquifer exemption if the water is currently or could be used as a source of drinking water.[5] In some cases, EPA has delegated primary responsibility for initial review of applications to the states, such as in the case of the California Primacy Agreement.[6]

It has recently come to light that in direct violation of both the Primacy Agreement and the terms of the SDWA, DOGGR permitted up to 5,625 potentially unlawful Class II injection wells to inject waste water, steam, chemicals, and other pollutants into non-exempt aquifers.[7] These include 90 wells at the AGOF: 14 waste disposal wells and 76 enhanced oil recovery wells that primarily injected steam underground, sometimes at high volumes. Subject to an agreement with the EPA, DOGGR has issued "emergency regulations" requiring all non-compliant injection wells to obtain aquifer exemptions by certain deadlines, depending on the quality of the water in the aquifer. FMOG and state regulators request this exemption in order to both legitimize its illegal injections and accommodate a planned massive expansion of production, which will involve drilling 350 wells, including new injection wells.

The Center and AGOF's neighbors are concerned that aquifers currently used for drinking water will be harmed by the exemption. If EPA grants this exemption request for the AGOF, operators will inject into an expanded area of the underlying aquifer beyond that in which they have been illegally injecting for decades. This application rests on the assertion that the aquifer does not currently serve as a source of drinking water and cannot now or in the future serve as a source of drinking water because it is hydrocarbon producing.[8] In addition, DOGGR asserts that

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[2] 40 C.F.R. § 145.32(b)(2).

[3] In the absence of a formal notice and comment period and public hearing, we request that EPA reject the aquifer exemption, because DOGGR has not demonstrated that the exemption meets state and federal regulatory requirements. See Attached: Comments on FMOG Arroyo Grande Oil Field Aquifer Exemption from Maya Golden-Krasner, Center for Biological Diversity (Sept. 21, 2015) ("AE Comments"); Comments on FMOG Arroyo Grande Oil Field Aquifer Exemption Supplement from Maya Golden-Krasner, Center for Biological Diversity (December 16, 2015) ("Supplemental AE Comments"); Comments on the Arroyo Grande Aquifer Exemption Application by Matt Hagemann (Dec. 14, 2015) ("Hagemann Comments").

[4] 40 C.F.R. § 144.7(a); 42 U.S.C. § 300h(d)(2).

[5] 40 C.F.R. § 146.4.

[6] Underground Injection Control Program, Memorandum of Agreement Between California Division of Oil and Gas and the United States Environmental Protection Agency, Region 9 (Sept. 9, 1982) ("Primacy Agreement"), *available at:* http://www.conservation.ca.gov/dog/for_operators/Documents/MOU-MOA/MOA_EPA_UIC_1982.pdf.

[7] Letter from Steve Bohlen, State Oil and Gas Supervisor, DOGGR, and Jonathan Bishop, Chief Deputy Director, State Water Resources Control Board, to Michael Montgomery, U.S. EPA (July 31, 2015) ("July 31, 2015 letter"), p. 1.

[8] DOGGR, California State Water Resources Control Board ("Water Board"), Statement of Basis, Arroyo Grande Field ("Statement of Basis"), *available at:*

this injection will not affect the quality of water that is, or may reasonably be, used for any beneficial use, and that the injected fluid will remain in the proposed exempted aquifer because the aquifer is zonally isolated.[9] Neighbors of the AGOF as well as an expert hydrogeologist have submitted comments disputing the basis for these claims.[10]

EPA must approve revisions to state Primacy Agreements, including aquifer exemptions. If a revision or aquifer exemption is "substantial," the change must be noticed in the Federal Register with a 30-day comment period.[11] Although the regulations do not define "substantial," EPA has indicated that aquifer exemptions for Class II wells are "substantial" if (1) the water in the aquifer has less than 3,000 mg/l total dissolved solids ("tds"), or (2) the exemption is "not related to action on a permit."[12]

We request that the EPA follow the formal rulemaking process outlined in 40 CFR section 145.32 for the proposed AGOF aquifer exemption for several reasons. First, the aquifer exemption is clearly a "substantial" revision to California's UIC program, because the water in the aquifer has less than 3,000 mg/l tds, and for the additional reasons detailed below. Second, this is a "complex" exemption request, regardless of whether it is deemed substantial. Third, the combination of new technology, climate change and current drought conditions warrant special review of what constitutes drinking water that can be "used in the future." Finally, current and widespread illegal underground injection into California aquifers demonstrates that the State of California has failed to adequately oversee and protect the state's drinking water, making DOGGR's determinations suspect and necessitating close oversight by EPA, as well as transparency and opportunity for public involvement at each stage in this process.

II. The Proposed Aquifer Exemption is "Substantial"

The Arroyo Grande Oil Field aquifer exemption meets the criteria for "substantial" revisions. First, the water quality in this aquifer is well below 3,000 mg/l tds – as low as 1,000 mg/l in some regions.[13] Furthermore, this exemption is not sought in conjunction with other

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ftp://ftp.consrv.ca.gov/pub/oil/Aquifer_Exemptions/County/San_Luis_Obispo/Arroyo_Grande_Oilfield/Dollie_Sands_Pismo_Formation/Arroyo%20Grande%20Statement%20of%20Basis%20Final.pdf; 40 C.F.R. §§ 146.4(a), (b)(1).

[9] Statement of Basis; California Pub. Resources Code § 3131.

[10] *See* Supplemental AE Comments, pp 16-20; Hagemann Comments; and Proposed Aquifer Exemption letter from Natalie Smith-Risner (Dec. 16, 2015). *See also* Cross Sectio, showing location of water well adjacent to proposed aquifer exemption zone created by Rob Hesse (Dec.16, 2015) and Rob Hesse, Aerial Image Overlay Showing Results of CBD's Public Records Act Request for Well Information (Feb. 10, 2016).

[11] 40 C.F.R. § 145.32(b)(2).

[12] US EPA, Underground Injection Control Program: Federally Administered Programs, 48 Fed. Reg. 40098, 40108 (Sept. 2, 1983). Later guidance added a qualifier excepting cases where the exemption involves "enhanced recovery allowed by rule." There is no exception for water disposal wells. (US EPA, Guidance for Review and Approval of State Underground Injection Control (UIC) Programs and Revisions to Approved State Programs, GWPB Guidance #34 at 5 (1984), *available at:* http://www.conservation.ca.gov/dog/general_information/Documents/Aquifer%20Exemption%20Guidance%2034.pdf.)

[13] *See, e.g.,* Freeport-McMoRan, Application for Aquifer Exemption, Arroyo Grande Oil Field ("Aquifer Exemption Application"), p. 20, *available at:* ftp://ftp.consrv.ca.gov/pub/oil/Aquifer_Exemptions/County/San_Luis_Obispo/Arroyo_Grande_Oilfield/Dollie_Sands_Pismo_Formation/Arroyo%20Grande%20Oilfield%20Edna%20Member%20Dollie%20Sands%20Pismo%20Formation%20Aquifer%20Exemption%20Application.pdf. *See also*, Aquifer Exemption Application, Appendix D 1-a,

current permitting requests. An aquifer exemption may be non-substantial if part of a larger permitting process because the notice and comment provided for the entire permitting process will provide opportunity for public participation in the aquifer exemption review as well.[14] Here, one of the reasons for the aquifer expansion is to accommodate a project that will add 350 new wells.[15] This project is subject to an environmental review process under the California Environmental Quality Act but, at FMOG's request, that review has been delayed pending the outcome of the aquifer exemption process.[16] The aquifer exemption application, however, ignores this clearly foreseeable, planned expansion, and the resulting changes in water quality and hydrogeology that could result from it. Therefore, that permitting process cannot be considered "in conjunction with" the aquifer exemption and the public has been denied its right to comment on the exemption in the context of the planned expansion. Consequently, either EPA must require DOGGR and the State Water Board to reevaluate the exemption in conjunction with this soon-to-be-permitted expansion, or the exemption must be deemed substantial.

III. This Is a Complex Aquifer Exemption

Even if this aquifer exemption is not deemed substantial, it will be complex, and thus should be subject to notice and comment. The EPA has indicated that "[w]here the effect of a proposed exemption that ordinarily would be considered minor appears particularly significant and far-reaching, EPA may choose to use the same rulemaking procedures normally reserved for "major" exemptions."[17] Furthermore, a recent 2014 EPA memo indicated that while many aquifer exemptions are routine, some are "complex" (even if not substantial) and require greater communication both within and outside the EPA.[18]

The circumstances surrounding the AGOF aquifer exemption meet the criteria for "complex" mentioned in the 2014 memo: the "proposed exempted area is located adjacent to an underground source of drinking water (USDW) that is currently in use, or where the potential future use of the USDW is unclear."[19] Furthermore, there is significant controversy regarding: whether the aquifer is hydrocarbon producing throughout the entire area; whether the aquifer might be used as a source of drinking water; incomplete surveys of, and data from, local residential drinking water wells; and the geological structure of the aquifer--namely, the claim that it is zonally isolated and will not affect beneficial use water. In fact, water from the aquifer

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available at:
ftp://ftp.consrv.ca.gov/pub/oil/Aquifer_Exemptions/County/San_Luis_Obispo/Arroyo_Grande_Oilfield/Dollie_Sands_Pismo_Formation/Arroyo%20Grande%20Oilfield%20Edna%20Member%20Dollie%20Sands%20Pismo%20Formation%20Aquifer%20Exemption%20Application%20Appendices.pdf.

[14] UIC Control program, *supra* note 12; *see also* Goliad County v. Uranium Energy Corp., 2009 U.S. Dist. LEXIS 47685, 7 (S. Dist. Texas 2009).

[15] San Luis Obispo County Department of Planning and Building, Initial Study, Phase V Oilfield Expansion Conditional Use Permit (November 2012) ("Phase V Initial Study"), p. 2, *available at:* http://www.slocounty.ca.gov/Assets/PL/environmental/plains/Environmental/initialstudy.pdf.

[16] Freeport McMoran Oil & Gas (formerly PXP) - Phase V Conditional Use Permit (DRC2012-00035), Ongoing Status Report, p. 2, *available at:*
http://www.slocounty.ca.gov/Assets/PL/environmental/plains/OngoingStatusReport.pdf.

[17] US EPA, UIC Control Program, *supra* note 12.

[18] Peter Grevatt, Office of Groundwater and Drinking Water, EPA, Memo: Enhancing coordination and communication with states on review and approval of aquifer exemption requests under the SDWA (Jul. 24, 2014).

[19] *Id.* at 2.

is currently withdrawn, treated, and *used for beneficial use* by being discharged into Pismo Creek. This controversy necessitates more public involvement than is provided for "non-complex" aquifer exemptions.

Further adding to the complexity of the exemption request, as noted above, FMOG is contemplating expansion of its operations in the AGOF.[20] The expansion will affect pressure, groundwater flow, and zonal isolation, in addition to potentially increasing seismic risk and subsidence. These operations will also vastly increase the volume of waste water produced at the site, beyond the capacity of the site's Water Reclamation Facility and FMOG's NPDES permit to discharge treated water into Pismo Creek. This raises the likelihood that large amounts of untreated waste water would be injected into the Dollie Sands. As a consequence, this exemption should not be approved until adequate data is collected to ensure that, even after expansion, the injected fluids will remain hydrologically isolated.

IV. The EPA Must Consider Current Technology and Climate Conditions in Assessing Future Use of Water

The technical criteria against which the DOGGR measured the requested aquifer exemption are outdated. The Safe Drinking Water Act was passed 40 years ago, and the technical criteria for USDWs and attendant exemptions are decades old. Technology has advanced significantly in the intervening time, with the result that it is now feasible to use lower-quality water for beneficial use. For example, California's first desalinization plant recently went online--a feat that seemed impossible when EPA adopted the criteria for exempt aquifers. Furthermore, the current drought conditions in California have necessitated new wells that are deeper and tap into previously unused aquifers. With global warming-induced climate change, California (like other states) is likely to continue to experience deep drought cycles, which will necessitate a long-term view toward protecting the state's drinking water.

The EPA should consider updating the technical criteria for aquifer exemptions and USDWs, but in the meantime the assertions made by DOGGR in its Statement of Basis for the AGOF aquifer exemption should be considered in light of current technology and drought conditions. It is clear that the DOGGR has failed to adequately consider and balance the current and future potential that the water in this aquifer will be used as drinking water. Public participation would facilitate the EPA's process of gathering and analyzing the current and future uses of the water.

V. California's History of Illegal Underground Injection--Including at AGOF--Necessitates More Stringent Review

With a history of lax to nonexistent control over oil and gas operations and underground injection in California, DOGGR's Statement of Basis should be subject to careful scrutiny and enhanced public participation. There are currently wells at AGOF that are illegally injecting into the non-exempt aquifer, and DOGGR *has continued to permit these illegal wells--including at AGOF*--even after acknowledging that this is a protected aquifer and pledging to increase

[20] Phase V Initial Study, p. 2.

regulation, oversight, and enforcement of injection throughout the state.[21] This situation is a direct result of DOGGR's failure to comply with its Primacy Agreement. Now DOGGR is seeking to sanction years of illegal injection at AGOF after the fact. Given this history, EPA should (1) carefully analyze assertions and supporting data for the DOGGR's Statement of Basis and (2) provide an opportunity for public comment during the process to ensure full and accurate information is considered.

Indeed, DOGGR's own "Responses to Comments"[22] demonstrate why EPA should implement a formal public process. Instead of responding to the specific, technical deficiencies commenters pointed out, DOGGR simply maintains that the public should trust that the state agencies have been diligent in reviewing all the necessary data in making its determination that the aquifer meets state and federal exemption criteria. For example, many people and organizations provided comments that there is not enough data about nearby water wells to show that water from this aquifer is not being used for domestic or beneficial purposes--and pointed to evidence that there *are* water wells drawing from the same formation. DOGGR simply and repeatedly responds that there was a thorough survey done and points to the very data that commenters said were inadequate.[23] DOGGR also entirely failed to respond to the Center's comment that US EPA has stated that parts of the proposed exempted area are not hydrocarbon bearing.[24] Instead, DOGGR merely reiterates that it is.[25] DOGGR asks that the public trust its analysis; however, its failure to directly address the technical comments and its history of ineffective UIC regulation makes this request untenable.

What is perhaps worse is DOGGR's casual dismissal of concerns about the effects of injection projects on the aquifer and surrounding water quality by disingenuously asserting that future injection project applications will be subject to a "detailed review of the project area and the project would be open. . . to the public for additional comments and requirements."[26] Once the aquifer has been exempted, however, that water has been sacrificed to FMOG, and no further review of its hydraulic connection to other groundwater will take place. DOGGR is treating this exemption as if the presumption is in favor of injection, rather than the presumption being in favor of protecting groundwater.[27] It is as if obtaining an exemption is merely a procedural hurdle to allowing injection: "[t]he Safe Drinking Water Act requires that an aquifer that meets the definition of a USDW be exempted before injection is permitted."[28] Further, contrary to DOGGR's unwarranted, repeated assertion that there will be an opportunity for the public to

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[21] Supplemental AE Comments, pp 10-11.

[22] DOGGR, Arroyo Grande Aquifer Exemption Request, Public Comment Summaries and Responses (Feb. 8, 2016) ("Responses to Comments"), *available at:* ftp://ftp.consrv.ca.gov/pub/oil/Aquifer_Exemptions/County/San_Luis_Obispo/Arroyo_Grande_Oilfield/Dollie_Sands_Pismo_Formation/Arroyo%20AE%20Response%20to%20ALL%20Comments%20Final%202-8-2016.pdf

[23] Responses to Comments, pp. 17, 23, 35.

[24] Supplemental AE Comments, p. 4.

[25] Responses to Comments, pp. 9, 14, 15, 16, 18, 21, 23-25, 32, 34.

[26] Responses to Comments, pp. 8. *See also* pp. 12, 13, 16, 27, 28, 29, 37, 39, 40-41, 42, 44 ("The public will be a part of the approval process and will have an opportunity to submit comments and concerns" and "The approval process is also open to the public for comments and concerns.")

[27] For a discussion on the presumption favoring protecting drinking water and against exemption, see AE Comments, pp. 5-8.

[28] Responses to Comments, p. 16

comment, there is, in reality, no public engagement in the injection approval process.[29] The aquifer exemption process is the public's only real opportunity to express its displeasure and deep concerns with DOGGR's cavalier forfeiture of our state's precious groundwater resources.

Ultimately, DOGGR punts the question of the need for additional data to the US EPA as the final arbiter in this matter.[30] As such, we urge the EPA to provide formal notice, the opportunity for the public to comment, and a public hearing for the proposed AGOF aquifer exemption not only because it is substantial, but also because it is highly controversial and complex. Public participation is crucial to ensure that the EPA has full access to the information needed to adequately determine if the water in the affected aquifer can be put to beneficial use. Thank you for your consideration. Please do not hesitate to contact me with any questions.

Sincerely,

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[29] According to the Primacy Agreement, *supra* n. 6, p. 5, DOGGR must, "at a minimum," "provide a 15 day public comment period, and make the non-confidential portions of the project plan and the representative Report on Proposed Operations available for review. If the Supervisor determines that a public hearing is necessary, public notice shall be provided at least 30-days prior to the public hearing." However, in reality, few people see the notices posted for three days in the local paper, and comments and hearings occur rarely, if ever. (*See* Horsley Witten Group, Final Report, California Class II Underground Injection Control Program Review (June 2011), *available at:* ftp://ftp.consrv.ca.gov/pub/oil/uic%20files/fullreport.pdf, pp. 58 ("Most District 1 UIC staff have never gone through the hearing process"), 91 ("No public hearing has ever been conducted in this District [2]"), 123 ("We [District 3] have never had a need to hold a public hearing as part of the approval process"), 162 ("The last public hearing in this district [4] was on December 4, 1986"), 194 ("No public hearings have been conducted [District 5"), 227 ("[District 6] *Have any hearings been held in the past ten years?* None").

[30] Responses to Comments, pp. 22, 41 ("In the event that EPA requires additional data, the State will gather that data.")

REFERENCES CITED AND ATTACHED

Comments on FMOG Arroyo Grande Oil Field Aquifer Exemption from Maya Golden-Krasner, Center for Biological Diversity (Sept. 9, 2015)

Comments on FMOG Arroyo Grande Oil Field Aquifer Exemption Supplement from Maya Golden-Krasner, Center for Biological Diversity (Dec. 16, 2015)

Bohlen, Steve, State Oil and Gas Supervisor, DOGGR, and Jonathan Bishop, Chief Deputy Director, State Water Resources Control Board, Joint Letter to Michael Montgomery, U.S. EPA (July 31, 2015)

DOGGR and EPA, Underground Injection Control Program, Memorandum of Agreement Between California Division of Oil and Gas and the United State Environmental Protection Agency, Region 9 (Sept. 9, 1982)

DOGGR, Arroyo Grande Aquifer Exemption Request, Public Comment Summaries and Responses (Feb. 8, 2016)

DOGGR, California State Water Resources Control Board ("Water Board"), Statement of Basis, Arroyo Grande Field (December 2, 2015)

Freeport McMoran Oil & Gas (formerly PXP) - Phase V Conditional Use Permit (DRC2012-00035), Ongoing Status Report

Freeport-McMoRan, Application for Aquifer Exemption Edna Member, Dollie Sands, Pismo Formation, Arroyo Grande Oil Field (2015)

Grevatt, Peter Office of Groundwater and Drinking Water, EPA, Memo: Enhancing coordination and communication with states on review and approval of aquifer exemption requests under the SDWA (Jul. 24, 2014).

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Horsley Witten Group, Final Report, California Class II Underground Injection Control Program Review (June 2011)

Letter from Steve Bohlen, State Oil and Gas Supervisor, DOGGR, and Jonathan Bishop, Chief Deputy Director, State Water Resources Control Board, to Michael Montgomery, U.S. EPA (July 31, 2015)

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US EPA, Underground Injection Control Program: Federally Administered Programs, 48 Fed. Reg. 40098, 40108 (Sept. 2, 1983).

CENTER for BIOLOGICAL DIVERSITY Because life is good.

February 25, 2016

Via email and FedEx

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Re: Proposed Arroyo Grande Oil Field Aquifer Exemption: Request for Denial

Dear Mr. Albright,

On February 8, 2016 the California Department of Conservation, Division of Oil, Gas and Geothermal Resources ("DOGGR") recommended an aquifer exemption for Class II injection wells in the Arroyo Grande oil field ("AGOF"), operated by Freeport McMoRan ("FMOG"). Under the Safe Drinking Water Act ("SDWA"), the EPA must approve this exemption before it is valid.[1] On February 11, 2016, the Center for Biological Diversity ("CBD" or "Center") sent comments to EPA requesting a formal rulemaking process under 40 C.F.R. section 145.32(b)(2), on the basis that the exemption is substantial, complex, and controversial.[2]

[1] 40 C.F.R. § 144.7(a)(2).

[2] Letter from Maya Golden-Krasner, Center for Biological Diversity, to US EPA (Feb. 11, 2016) ("CBD, Feb. 11 letter to EPA"), attached. Recent documents produced by EPA demonstrate that it is EPA's understanding that aquifers with zones with TDS less than 3,000 mg/l should go to, and involved, EPA Headquarters. *See e.g.,* email from George Robin to Michele Dermer (March 1, 2013) Re: (Substantial/Non-Substantial; Major/Minor)(Discussion

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Now, the Center hereby requests that US EPA deny the aquifer exemption, because FMOG and DOGGR have failed to demonstrate that the aquifer meets the federal or state criteria for exemption. Neither FMOG nor DOGGR have met their burden of demonstrating that the aquifer cannot be used for beneficial or domestic purposes, or that it is hydraulically isolated from other current or future beneficial use or domestic water sources.

I. Background

The SDWA is an important safeguard for our nation's drinking water, a precious resource. Water is presumed protected unless exempted.[3] The EPA may not approve an aquifer exemption if the water is currently or could be used as a source of drinking water.[4] In some cases, EPA has delegated primary responsibility for initial review of applications to the states, such as in the case of the California Primacy Agreement.[5]

Over the past couple of years, it has come to light that in direct violation of both the Primacy Agreement and the SDWA, DOGGR permitted up to 5,625 potentially unlawful Class II injection wells to inject waste water, steam, chemicals, and other pollutants into aquifers without exemptions.[6] These include 90 wells at the AGOF: 14 waste disposal wells and 76 enhanced oil recovery wells that primarily inject steam underground, sometimes at high volumes. Subject to an agreement with the EPA, DOGGR has issued "emergency regulations" requiring all non-compliant injection wells to obtain aquifer exemptions by certain deadlines, depending on the quality of the water in the aquifer. FMOG and state regulators request this exemption in order to both legitimize these illegal injections and accommodate a planned massive expansion of production, which will involve drilling or reworking up to 450 wells, including new injection wells.

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before Response to Jerry) UIC Guidance 34. In addition, EPA has expressed concern over the 45-day period provided in 40 CFR 144.7 for EPA to conduct a thorough technical review, especially if it requires additional information from the operator. *See e.g.,* email from Jerry Salera (CA DOC) to George Robin (US EPA), cc: Michele Dermer (US EPA) (March 8, 2013) Re: (Preliminary) (TechReview) Cat Canyon Aquifer Exemption Application - Sisquoc Zone (part of a longer email chain titled RE (2nd Try) (Final)(Tech Review) Cat Canyon Aquifer Exemption Application - Sisquoc Zone (last date in email chain: Mar. 21, 2103)). This need for more information could trigger an additional Public Comment period. *Id.* Furthermore, EPA has indicated that conversations between DOGGR, the Regional Board "are more technically in depth than those from the Public's scrutiny." *Id.* If this is the case, we are entitled to an additional public comment period both because the TDS is less than 3,000 mg/L and in order to be provided the opportunity to respond to all of the documentation for this project.

[3] 40 C.F.R. § 144.7(a); 42 U.S.C. § 300h(d)(2).

[4] 40 C.F.R. § 146.4.

[5] Underground Injection Control Program, Memorandum of Agreement Between California Division of Oil and Gas and the United State Environmental Protection Agency, Region 9 (Sept. 9, 1982) ("Primacy Agreement"), *available at:* http://www.conservation.ca.gov/dog/for_operators/Documents/MOU-MOA/MOA_EPA_UIC_1982.pdf.

[6] Letter from Steve Bohlen, State Oil and Gas Supervisor, DOGGR, and Jonathan Bishop, Chief Deputy Director, State Water Resources Control Board, to Michael Montgomery, U.S. EPA (July 31, 2015) ("July 31, 2015 letter"), p. 1.

The Center and AGOF's neighbors are concerned that aquifers currently used for drinking water will be harmed by the exemption. If EPA grants this exemption request for the AGOF, operators will inject into an expanded area of the underlying aquifer beyond that in which they have been illegally injecting for decades. This application rests on the assertion that the aquifer does not currently serve as a source of drinking water and cannot now or in the future serve as a source of drinking water because it is hydrocarbon producing.[7] In addition, DOGGR asserts that this injection will not affect the quality of water that is, or may reasonably be, used for any beneficial use, and that the injected fluid will remain in the proposed exempted aquifer because the aquifer is zonally isolated.[8]

Neighbors of the AGOF, nonprofits, and experts have submitted comments disputing the basis for these claims.[9] Instead of responding to the specific, technical deficiencies brought up by commenters, DOGGR simply maintains that the public should trust that the state agencies have been diligent in reviewing the necessary data and are satisfied the aquifer meets state and federal exemption criteria.[10] DOGGR's history of ineffective UIC regulation makes its assertion that the public should simply trust DOGGR's baseless conclusions particularly egregious and intolerable. DOGGR's insistence that it is right cannot erase the fact that it and FMOG have failed to demonstrate that this aquifer meets the criteria for exemption from the Safe Drinking Water Act. As a result, the Center requests that you deny this request to sacrifice still more of California's dwindling and precious groundwater resources to the oil industry.

II. The Presumption is in Favor of Protecting Groundwater[11]

Congress passed the SDWA to protect public health by regulating and protecting the nation's public drinking water supply. The federal underground injection control program, part C

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[7] DOGGR, California State Water Resources Control Board ("Water Board"), Statement of Basis, Arroyo Grande Field ("Statement of Basis"), *available at:* ftp://ftp.consrv.ca.gov/pub/oil/Aquifer_Exemptions/County/San_Luis_Obispo/Arroyo_Grande_Oilfield/Dollie_Sands_Pismo_Formation/Arroyo%20Grande%20Statement%20of%20Basis%20Final.pdf; 40 C.F.R. §§ 146.4(a), (b)(1).

[8] Statement of Basis, p. 6; California Pub. Resources Code § 3131.

[9] *See attached*: Comments on FMOG Arroyo Grande Oil Field Aquifer Exemption from Maya Golden-Krasner, Center for Biological Diversity (September 21, 2015) ("AE Comments"); Comments on FMOG Arroyo Grande Oil Field Aquifer Exemption Supplement from Maya Golden-Krasner, Center for Biological Diversity (December 16, 2015) (with attachments) ("Supplemental AE Comments"); Comments on the Arroyo Grande Aquifer Exemption Application by Matt Hagemann (Dec. 14, 2015; Attachment A to Supplemental Comments) ("Hagemann Comments"); and, Proposed Aquifer Exemption letter from Natalie Smith-Risner (Dec. 16, 2015). *See also* Cross Section showing location of water well adjacent to proposed aquifer exemption zone created by Rob Hesse (Dec. 16, 2015) ("Hesse Cross Section") and Rob Hesse, Aerial Image Overlay Showing Results of CBD's Public Records Act Request for Well Information (Feb. 10, 2016); Supplement AE Comments, p. 10, citing Natural Resources Defense Council, Aquifer Exemption Comments, (Sept. 21, 2015) ("NRDC AE Comments").

[10] See CBD, Feb. 11 Letter to EPA, pp. 6-7 for some examples of DOGGR's refusal to address commenters' legitimate concerns.

[11] The Center described the presumption in favor of protecting California's water in its AE Comments (pp. 5-8), but it is worth repeating here.

of the SDWA, was established to safeguard underground drinking water sources endangered by underground injections.[12] The SDWA and its attendant regulations ("Federal Regulations") protect not only existing public water systems;[13] crucially, they also safeguard any drinking water source that supplies, or can reasonably be expected in the future to supply, any public water system.[14] In other words, the SDWA and the Federal Regulations preserve future sources of drinking water by prohibiting their contamination *before* they are drawn upon.

The primary purpose of the regulations promulgated pursuant to the Safe Drinking Water Act is to protect drinking water and potential sources of drinking water. It does not seek to balance the protection of drinking water and potential drinking water sources with industrial use of those sources. Rather, the statutory language, purpose and intent safeguard water sources from Class II well injection activities. As the court found in *United States v. King*,

> The injection provisions of the SDWA are "preventive." 1974 U.S.C.C.A.N. at 6463. Congress concluded that the most effective way to ensure clean drinking water was to prevent pollution of underground aquifers in the first place, rather than to clean up polluted aquifers after the fact. Under the SDWA, the danger posed by proposed injections to an underground aquifer is determined during the permitting process. As noted above, the SDWA puts the burden on a permit applicant to show that a proposed injection will not endanger an USDW. If an applicant fails to show that a proposed injection is safe, the SDWA requires that the permit be denied. That is, in the absence of a showing by the applicant that a proposed injection is safe, the SDWA presumes that the injection will endanger an USDW.[15]

Thus, here, the burden is on FMOG to prove that the aquifer will not endanger a USDW, and this application fails to do that.

III. The EPA Must Consider DOGGR's Failure To Effectively Administer the UIC Program in California, as Well as Current Technology and Climate Conditions, in Weighing that Presumption Against FMOG's and DOGGR's Burden to Demonstrate the Aquifer Meets the Exemption Criteria

If DOGGR's illegal permitting of thousands of wells to inject into federally protected water is not enough, US EPA must consider that, even while DOGGR has ardently pledged to

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[12] *Legal Envtl. Assistance Found., Inc. v. United States EPA*, 118 F.3d 1467, 1475-76 (11th Cir. 1997) (quoting House Report, H.R. Rep. No. 93-1185 at 29, reprinted in 1974 U.S.C.C.A.N. 6454, 6481).

[13] A public water system is a system for the provision of public water for human consumption through pipes or other constructed conveyances, which has at least 15 service connections or regularly serves at least 25 people. *See* 40 U.S.C. § 300f(4).

[14] 42 U.S.C. § 300h(d)(2).

[15] *United States v. King*, 660 F.3d 1071, 1079 (9th Cir. 2011).

reform its UIC oversight, it has continued to permit wells at AGOF into non-exempt areas of the aquifer.[16] Further, DOGGR has failed to keep its commitments to EPA that would demonstrate that it is becoming a more responsible agency.[17] For instance, DOGGR committed, by February 15, 2016, to submit 90% of proposed aquifer exemptions for all Category II wells that had been illegally injecting into non-exempt aquifers.[18] This deadline has passed, and DOGGR has not submitted anywhere near 90% of these aquifers to EPA.[19] In fact, it has submitted only one aquifer exemption package for public comment so far: the AGOF.

EPA must consider whether it is willing to readily forfeit this groundwater to an agency that has proven itself to be unable and/or unwilling to comply with or enforce its own laws and regulations. What is more, EPA must take a hard look at the fact that conditions in California and the available technology have changed in the decades since it adopted the exemption criteria. As the agency charged with protecting our environment, EPA must consider these factors in weighing the presumption in favor of protecting groundwater against FMOG's and DOGGR's attempts to legitimize illegal activity that has resulted in the injection of over 63 million gallons of wastewater and steam, along with unknown quantities of toxic chemicals, into a protected aquifer.[20]

If EPA grants the exemption, it would be sanctioning such activity based on antiquated criteria.[21] The Safe Drinking Water Act was passed 40 years ago, and the technical criteria for USDWs and attendant exemptions are decades old. Technology has advanced significantly in the intervening time, with the result that it is now feasible to use lower-quality water for beneficial use. For example, California's first desalinization plant recently went online--a feat that seemed impossible when EPA adopted the criteria for exempt aquifers.[22] Moreover, the current drought

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[16] See Supplemental AE Comments, pp. 10-11, for a discussion and references, including documents produced by DOGGR on Dec. 8, 2015, of AGOF permits to drill injection wells in non-exempt aquifer, conditioned on receipt of exemption, in 2014, and AGOF permits to rework injection wells in non-exempt aquifer, *not* conditioned on receipt of exemption, in 2013-2014.

[17] See, for instance, an email from a new DOGGR employee that was recently produced by EPA that confirms a culture of avoiding compliance at DOGGR: "Yes, the aquifer exemption would have to be carefully thought out, and I think there's a good case for it. I interpret what I hear from others not 'there would have to be a good case for it', I hear 'we've found ways to avoid that for 20 years, I think we can find a way around it this time as well'." Email from Kathleen Andrews (DOC) to George Robin (EPA) (March 20, 2013) RE: For Discussion.

[18] Letter from Jane Diamond, Director, Water Division, EPA Region 9, to Jonathan Bishop, California State Water Resources Control Board, and Steven Bohlen, Division of Oil, Gas and Geothermal Resources (March 9, 2015) ("March 9, 2015 EPA letter"), p. 2.

[19] DOGGR also committed to complete screening for Category 3 wells by February 15, 2016, and failed to comply with that commitment as well. *Id.*

[20] Supplemental AE Comments, p. 10, *citing* NRDC AE Comments, p. 6, Table 2.

[21] See Supplemental AE Comments, pp. 8-11, for a discussion of the antiquated criteria and changes in California's water use due to drought.

[22] *See e.g.*, Bradley J. Fikes, "$1-Billion Desalination Plant, Hailed as Model for State, Opens in Carlsbad," *Los Angeles Times* (Dec. 14, 2015), *available at:* http://www.latimes.com/local/california/la-me-desalination-20151215-story.html.

conditions in California have necessitated new wells that are deeper and tap into previously unused aquifers.[23] With global warming-induced climate change, California (like other states) is likely to continue to experience deep drought cycles,[24] which will necessitate a long-term view toward protecting the state's drinking water.

The EPA should consider updating the technical criteria for aquifer exemptions and USDWs but, in the meantime, the assertions made by DOGGR in its Statement of Basis for the AGOF aquifer exemption should be considered in light of current technology and drought conditions. It is clear that the DOGGR has failed to adequately consider and balance the current and future potential that the water in this aquifer will be used as drinking water. California's historic drought puts the necessity of protecting its precious groundwater into even more stark relief and makes it much more urgent than when the criteria were first adopted, especially as climate change is likely to increase the frequency and severity of such droughts.

IV. FMOG and DOGGR Have Failed to Demonstrate That the Aquifer is Not Currently Being Used For, or Affecting, Domestic or Beneficial Use Water

Even if EPA wishes to turn a blind eye to DOGGR's unwillingness or inability to oversee its underground injection program, the antiquated criteria used to determine whether an aquifer should be exempted, and the fact that current and future droughts mean that previously untapped sources of water will be used for domestic and beneficial uses,[25] EPA cannot approve this exemption because it fails to meet both state and federal criteria for exemption.

The federal regulations require that FMOG demonstrate that the aquifer does not or cannot now or in the future be used as a source of drinking water because it is: (1) hydrocarbon producing or contains hydrocarbons that are commercially producible, (2) it is situated at a location or depth that makes it economically or technologically impractical to use for drinking water, or (3) it is so contaminated that it would be economically or technologically impractical to drink it.[26] Alternatively, an aquifer can receive an exemption if (4) the TDS is over 3,000 and it is not reasonably expected to supply a public water system.[27] State law prohibits aquifer exemptions unless the exemption meets the federal criteria *and* the injection will not affect the quality of any current or potential future beneficial use water and is zonally isolated.[28] DOGGR and FMOG have not shown that the entire exempted area is not currently being used for, or

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[23] AE Comments, pp. 3-4, 18-20, describing the effects of the drought on water usage in the state.

[24] *See e.g.*, Williams, Park A. et al., "Contribution of Anthropogenic Warming to California Drought During 2012-2014," *Geophysical Research Letters*, Vol. 42, Issue 16 (Aug. 28, 2015), pp. 6819-6828.

[25] "Beneficial uses" "include, but are not limited to: domestic, municipal, agricultural, and industrial supply; power generation; recreation; aesthetic enjoyment; navigation; and preservation and enhancement of fish, wildlife, and other aquatic resources or preserves." Cal. Water Code § 13050(f).

[26] 40 C.F.R. §§ 146.4(a), (b).

[27] 40 C.F.R. §§ 146.4(c).

[28] Public Resources Code § 3131(a).

affecting, domestic or beneficial use water, nor have they demonstrated that the aquifer is zonally isolated. As a result, the Center requests that EPA reject this exemption.

First, FMOG and DOGGR have not met their burden of demonstrating under state and federal law that this aquifer is undrinkable or otherwise unusable for beneficial purposes; in fact, evidence contradicts this. For instance, water from the aquifer is already being put to beneficial use: produced water is being treated and discharged into Pismo Creek, and there helps maintain the habitat for the endangered California steelhead and tidewater goby.[29] On that fact alone this exemption must be denied--regardless of whether the Water Reclamation Facility ("WRF") could financially operate without FMOG's concurrent oil operations.[30] The relevant inquiry under state law, Public Resources Code section 3131(a), is whether an exemption will affect the quality of water that is, or may reasonably be, used for any beneficial use. Clearly, this water can be put to beneficial use, and if an oil company can pay for the operation of the WRF, if necessary, so can another entity. Further, the aquifer is already used, albeit indirectly, as drinking water, since water from Pismo Creek also helps recharge the Santa Maria water basin, the principal water source for thousands of residents and landowners.[31] This belies the assertion that it cannot now or in the future be used as a source of drinking water.[32] Indeed, the TDS in this aquifer is well below 3,000 mg/l – as low as 1,000 mg/l in some regions[33] -- a key indicator under the federal Safe Drinking Water Act (SDWA) of higher quality water."[34] In other words, there is clear evidence that this aquifer is being and can be used for beneficial and domestic uses.

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[29] Freeport McMoRan, Application for Aquifer Exemption, Arroyo Grande Oil Field ("FMOG AE Application"), pp. 20-21, *available at*: ftp://ftp.consrv.ca.gov/pub/oil/Aquifer_Exemptions/County/San_Luis_Obispo/Arroyo_Grande_Oilfield/Dollie_Sands_Pismo_Formation/Arroyo%20Grande%20Oilfield%20Edna%20Member%20Dollie%20Sands%20Pismo%20Formation%20Aquifer%20Exemption%20Application%20Complete.pdf.

[30] *See e.g.*, FMOG AE Application, p. 21, asserting that the only way to use this otherwise "stranded" water for beneficial purposes is to use the oil company's infrastructure to separate out the oil and treat the groundwater. The Center disagrees, however, that FMOG is the only entity capable of operating the WRF, considering the variety of water treatment plants, including a desalinization plant, constructed or operated throughout the state.

[31] AE Comments, pp. 20-21 (including references).

[32] 40 CFR § 146.4(b).

[33] *See e.g.,* FMOG AE Application, p. 20, *available at:* ftp://ftp.consrv.ca.gov/pub/oil/Aquifer_Exemptions/County/San_Luis_Obispo/Arroyo_Grande_Oilfield/Dollie_Sands_Pismo_Formation/Arroyo%20Grande%20Oilfield%20Edna%20Member%20Dollie%20Sands%20Pismo%20Formation%20Aquifer%20Exemption%20Application.pdf. *See also*, Aquifer Exemption Application, Appendix D 1-a, *available at:* ftp://ftp.consrv.ca.gov/pub/oil/Aquifer_Exemptions/County/San_Luis_Obispo/Arroyo_Grande_Oilfield/Dollie_Sands_Pismo_Formation/Arroyo%20Grande%20Oilfield%20Edna%20Member%20Dollie%20Sands%20Pismo%20Formation%20Aquifer%20Exemption%20Application%20Appendices.pdf.

[34] Memorandum, CalEPA Review of UIC Program, from Matthew Rodriguez, Secretary of CalEPA to Cliff Rechtschaffen, Senior Advisor, Office of the Governor, and John Laird, Secretary, California Natural Resources Agency (March 2, 2015) ("March 2, 2015 CalEPA Memorandum"), p. 1, *available at*: http://www.calepa.ca.gov/Publications/Reports/2015/UICFindings.pdf. FMOG and DOGGR, therefore, cannot rely on 40 CFR § 146.4(c) (TDS is over 3,000 and is not reasonably expected to supply a public water system) for an exemption.

Therefore, it cannot meet the federal or state requirements for exemption, and the exemption must be denied.

DOGGR nonetheless continues to maintain that the aquifer cannot be used as a source of drinking water because it is hydrocarbon producing.[35] EPA, however, has already found that some of the area that would be exempted is, in fact, *not* hydrocarbon producing. EPA wrote to FMOG: "The reported injection zone water (receiving water) is less than 3,000 mg/L TDS, and although much of the area that is requested for exemption is hydrocarbon producing, there are portions of the requested exemption area that are no longer productive."[36] EPA thus told FMOG that to support an exemption, FMOG would need to demonstrate that the aquifer is too deep, located too far, or too contaminated to make it practical to use for drinking water.[37] Although, again, the Center pointed this correspondence out in its comments, DOGGR failed to respond and instead continues to insist that FMOG should receive the exemption because the aquifer is hydrocarbon producing.[38] As EPA itself has pointed out, this is simply not the case.

Second, despite DOGGR's inexplicable insistence that the application includes a thorough survey of water supply wells, and that none are drawing from the Dollie Sands (which is not surprising, according to DOGGR, because this formation contains a lot of oil), neither assertion has been substantiated.[39] There was not a thorough, or even adequate, survey of the nearby domestic and beneficial use water wells, and in fact, more recent information reveals that there may be wells drawing from the aquifer proposed for exemption.[40] In spite of the fact that at least 105 drinking water wells are within one mile of the aquifer, the fact that dozens of water wells have been built in the Edna Member, and repeated requests for more detailed and accurate water well records (especially given that half of the known wells "surveyed" were lacking complete records), DOGGR has yet to provide a maps and cross sections showing the locations

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[35] Statement of Basis, pp. 2-3.

[36] Letter from Patricia Abel, District Deputy, DOGGR, to Kenneth R. Bork, Agent, Freeport-McMoRan Oil & Gas, LLC Re: Arroyo Grande Oil Field, Aquifer Exemption, Dollie Zone of Pismo Fm (June 8, 2015) ("DOGGR, June 8, 2015 Letter"), p. 3. *See also* Supplemental AE Comments, p. 4. DOGGR stated in its Responses to Comments that "[a]dditional information, including proposed expanded areas of production, has confirmed the presence of hydrocarbons in the new expanded area." (DOGGR, Responses to Comments, p. 9.) If that is the case, however, DOGGR has failed to provide this unknown "additional information" to the public.

[37] *Id.*

[38] *See e.g.*, DOGGR, Responses to Comments, pp. 21, 23

[39] *See e.g.,* DOGGR, Responses to Comments, pp. 17, 23, 35, 37. As noted above, EPA has stated that there are areas of the proposed exempt aquifer that do not contain hydrocarbons. *See also* NRDC AE Comments, pp. 10-11, explaining why FMOG has not met the burden of demonstrating the entire aquifer is hydrocarbon producing.

[40] Matt Hagemann, PG, C. Hg., Comments on the Arroyo Grande Aquifer Exemption Response to Comments (February 12, 2016) ("Hagemann, February 12, 2016 letter"), attached; Letter from Rob Hesse to Maya Golden-Krasner, Re: Location of Existing and Future Water Supply Wells in Areas Surrounding the Arroyo Grande Oilfield, San Luis Obispo County, California (Feb. 24, 2016) ("Hesse, February 24, 2016 letter"), attached; Hagemann Comments, pp. 1-3; AE Comments, pp. 18-20.

of water wells vis-à-vis the proposed exempted area.[41] Indeed, even though DOGGR and the Central Coast Regional Water Quality Control Board ("Regional Board") requested more information on surrounding water wells from FMOG, testing on nearby water wells has not been performed, and the agencies have declined to follow up.[42]

DOGGR failed to investigate indications that wells may be accessing the same aquifer, despite the Center pointing out the possibility in its December 2015 comments.[43] Had the agencies required a more thorough survey of water wells and data, they might have found recent evidence that directly contradicts DOGGR's conclusion that no water wells are accessing this aquifer. A recent look at the area's water wells indicates that there may be at least one well inside the tar seal.[44] It appears that new water wells are being drilled in the area that have not been examined, including at least one drilled in 2015, either inside or immediately adjacent to the proposed exemption boundary.[45] Current and probable future drought conditions mean that new wells like this one are increasingly likely in the future.

Third, even if EPA believes that water wells are not drawing from the same formation as the exempted area, DOGGR and FMOG have not shown that the exempted area is zonally isolated from, and will not affect, other domestic or beneficial water uses. This is particularly concerning given evidence that water wells are extremely close to and potentially inside, the aquifer.[46] As the Center, hydrogeologist Matt Hagemann, and others have pointed out, FMOG's (and now DOGGR's) assertions that the tar seal, fault, and Miguelito boundaries restrict water flow are based on highly interpretive assertions, rather than conclusions supported with a numerical groundwater model, pump tests, or aquifer tests, as they must be.[47] For example, the exact location of the tar seal is merely inferred.[48] If water wells are inside or immediately adjacent to the tar seal, lack of certainty about the tar seal boundary combined with lack of knowledge of the exact location of water wells and depths means that DOGGR has no idea

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[41] Hagemann, February 12, 2016 letter, pp. 1, 2; Hagemann Comments, pp. 2-3; Hesse February 24, 2016 letter. See also Supplemental AE Comments, pp. 7-8 (discussing inadequacies of the Miguelito Member and the tar seal acting as barriers or aquitards); NRDC AE comments, pp. 8-9, 14-15.

[42] Supplemental AE Comments, p. 7, citing the Regional Board's 13267 Order to FMOG and documents submitted by FMOG in response, found at: http://geotracker.waterboards.ca.gov/profile_report.asp?global_id=T10000006979.

[43] Supplemental AE Comments, p. 6 (noting that at least 24 wells are known to have been completed in the Edna member of the Pismo Formation, the same geologic unit that is proposed for exemption (with explanation and references)).

[44] Hesse, February 24, 2016 letter, and Attachments.

[45] *Id.*, Attachment A.

[46] *Id. See also* Hesse Cross Section.

[47] *Id. See also* Supplemental AE letter, pp. 5, 8 (explaining inconsistencies and unsubstantiated conclusions regarding the aquifer's barriers as well as the need for numerical modeling and aquifer tests); Hagemann Comments; Hagemann, February 12, 2016 letter. In addition, even though DOGGR insists this is a bowl and that the dewatering project means that the injection fluids will stay inside the bowl, it has not provided any tests to substantiate this assertion or to address the comments raised that dewatering the aquifer could cause water from other water sources to flow into the bowl. *See also* NRDC AE Comments, pp. 15-17.

[48] Supplemental AE Comments, p. 5; Hagemann Comments, p. 5; NRDC AE Comments, p. 17.

whether water wells are hydraulically isolated from this aquifer. In fact, there are no actual surveys or survey maps of the aquifer boundaries at all. For instance, different maps provided by DOGGR show different aquifer boundaries, including where the fault lies.[49] Precision is critical, however, when water wells sit adjacent to, on, or possibly inside the boundary borders. DOGGR, however, failed to respond to, or investigate, these real problems with FMOG's application.[50]

The public--especially those whose water wells sit next to the AGOF--should not be forced to rely on the best guess of an agency with a history of failing to protect the state's water. Without numerical groundwater models and clear water well data demonstrating hydraulic isolation, EPA must deny this application.

V. FMOG and DOGGR Have Not Demonstrated that the Aquifer Will Not Be Used for, or Affect, Domestic or Beneficial Use Water in the Future

FMOG is contemplating a massive expansion of its operations in the AGOF--up to 450 new or reworked wells, and up a ten-fold increase in production.[51] The aquifer exemption application, however, improperly ignores this clearly foreseeable, planned expansion, and the changes in water quality and hydrogeology that could result from it. Thus, not only do DOGGR and FMOG fail to provide current groundwater models and aquifer tests to demonstrate the effects of pressure on the aquifer and surrounding groundwater, but they then claim that this massive expansion project, which will affect groundwater flow, is irrelevant.[52] The problem with this logic is that, once the aquifer has been exempted, that water has been sacrificed to FMOG or future oil companies, and no further review of its hydraulic connection to other groundwater will take place.

Fundamentally, the assertion that this process is only about whether to sacrifice the water and, therefore, the expansion is unrelated, makes little sense. The expansion will affect pressure, groundwater flow, and zonal isolation, in addition to potentially increasing seismic risk and subsidence. These operations will also vastly increase the volume of wastewater produced at the

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[49] Compare, e.g., the maps on slides 7 and 13 of DOGGR's September 21, 2015 public presentation (*available at:* ftp://ftp.consrv.ca.gov/pub/oil/Aquifer_Exemptions/County/San_Luis_Obispo/Arroyo_Grande_Oilfield/Dollie_Sands_Pismo_Formation/Arroyo%20Grande%20Aquifer%20Exemption%20Presentation%209.21.15.pdf). The aquifer boundaries are not identical.

[50] Hagemann, February 12, 2016 letter.

[51] San Luis Obispo Planning, Phase V Initial Study, p. 2. In addition, there are current efforts to build 31 new wells under a Phase IV expansion project. The Conditional Use Permit ("CUP") for that project expired last year, and FMOG is currently applying for a CUP extension. The Center submitted comments and an appeal of the San Luis Obispo Department of Planning and Building's decision to grant the extension. *See* CBD Comment letter from Maya Golden-Krasner to the San Luis Department of Planning ("SLO Planning") Re: Freeport McMoRan Application to Extend Phase IV CUP #D010386D (Oct. 21, 2015) and CBD Comment letter from Maya Golden-Krasner to SLO Planning re: Freeport McMoRan Application to Extend Phase IV CUP #D010386D - Supplemental Information (Nov. 11, 2015). *See also* CBD Appeal from Planning Commission Decision on November 12, 2015 to San Luis Obispo County Supervisors, File Number DRC20150002 (Nov. 25, 2015).

[52] DOGGR, Responses to Comments, pp. 7, 14-15, 34

site, beyond the capacity of the site's Water Reclamation Facility and FMOG's NPDES permit to discharge treated water into Pismo Creek. This raises the likelihood that large amounts of untreated wastewater would be injected into the Dollie Sands. As a consequence, this exemption should not be approved until adequate data is collected to ensure that, even after expansion, the injected fluids will remain hydraulically isolated.

Indeed, FMOG's own actions call into question the separate nature of the exemption and the future project. FMOG has requested that the DEIR for the Phase V expansion be put on hold until the aquifer exemption process is complete.[53] The Phase V expansion project and the aquifer exemption are intricately related; FMOG needs the exemption to legitimize its current illegal injection and accommodate future expansion.

Worse yet, DOGGR casually dismisses concerns about the effects of this expansion on the aquifer and surrounding water quality by disingenuously asserting that future injection project applications will be subject to a "detailed review of the project area and the project would be open. . . to the public for additional comments and requirements."[54] Contrary to DOGGR's unwarranted, repeated assertion that there will be an opportunity for the public to comment on specific injection projects, there is, in reality, little to no public engagement in the injection approval process.[55] Furthermore, the CEQA process for the expansion project will not provide the public the opportunity to comment on the project's effect on groundwater pressure and flow because there is no adequate baseline understanding or model of current pressure and flow. Additionally, if EPA grants this aquifer exemption to FMOG, the oil company will--in the EIR process--simply assert that any discussion of groundwater modeling, flow, and pressure took place in the AE process, when DOGGR and EPA decided to exempt the aquifer. This is the public's only real opportunity to express its displeasure with and deep concerns about DOGGR's cavalier forfeiture of our state's precious groundwater resources.

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[53] Phase V Conditional Use Permit (DRC2012-00035) Ongoing Status Report (2012), *available at:* http://www.slocounty.ca.gov/Assets/PL/environmental/plains/OngoingStatusReport.pdf.

[54] Responses to Comments, pp. 8; *see also* pp. 12, 13, 16, 27, 28, 29, 37, 39, 40-41, 42, 44 ("The public will be a part of the approval process and will have an opportunity to submit comments and concerns" and "The approval process is also open to the public for comments and concerns.")

[55] According to the primacy agreement, *supra* note 5, p. 5, DOGGR must, "at a minimum," "provide a 15 day public comment period, and make the non-confidential portions of the project plan and the representative Report on Proposed Operations available for review. If the Supervisor determines that a public hearing is necessary, public notice shall be provided at least 30 days prior to the public hearing." However, in reality, few people see the notices posted for three days in the local paper and comments and hearings occur rarely, if ever. *See* Horsley Witten Group, Final Report, *California Class II Underground Injection Control Program Review* (June 2011), *available at:* ftp://ftp.consrv.ca.gov/pub/oil/uic%20files/fullreport.pdf, pp. 58 ("Most District 1 UIC staff have never gone through the hearing process"), 91 ("No public hearing has ever been conducted in this District [2]"), 123 ("We [District 3] have never had a need to hold a public hearing as part of the approval process"), 162 ("The last public hearing in this district [4] was on December 4, 1986"), 194 ("No public hearings have been conducted [District 5"), 227 ("[District 6] *Have any hearings been held in the past ten years?* None").

Finally, DOGGR cannot punt a complete groundwater, hydrogeologic analysis to future review processes and ignore the proposed expansion because the aquifer exemption regulations specifically contemplate future uses of water. The federal SDWA regulations require DOGGR to demonstrate that the aquifer "cannot now *and will not in the future* serve as a source of drinking water . . . or supply a public water system."[56] State law requires that DOGGR show that the "injection of fluids will not affect the quality of water that is, *or may reasonably be*, used for any beneficial use."[57] In order to assess whether injection will or may in the future affect any drinking or beneficial use water, DOGGR and EPA must take into account foreseeable projects that will affect the aquifer pressure and flow.

DOGGR is treating this exemption as if the presumption is in favor of injection, rather than the presumption lying in favor of protecting groundwater.[58] It is as if obtaining an exemption is merely a procedural hurdle to allowing injection: "[t]he Safe Drinking Water Act requires that an aquifer that meets the definition of a USDW be exempted before injection is permitted."[59] We trust that EPA will take this exemption application and the protection of California's water more seriously, and deny the exemption.

VI. In Addition to Ignoring Any Need for Groundwater Models Under Current and Future Conditions, DOGGR Has Failed to Require FMOG to Address Concerns About the Effects of Seismic Activity and Subsidence on this Aquifer

The exemption application entirely fails to take into account potential effects of earthquakes, even small ones, to create new pathways to other groundwater sources, and to damage wells.[60] This includes wells that are idle or plugged, which can become pathways to contamination. In addition, recent research has confirmed that waste water disposal can induce earthquakes in California oil fields, depending on the geologic conditions.[61] It recommends a detailed analysis of seismicity records to "lower magnitudes and by analyzing waveform relocated catalogs as well as hydrogeologic models."[62] As explained above, however, no such hydrogeologic models exist for the AGOF, nor does any analysis of seismicity on this aquifer. Given this uncertainty, EPA should not approve the exemption.

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[56] 40 CFR §§ 146.4(b), (c) (emphasis added).

[57] Pub. Resources Code § 3131(a)(2) (emphasis added).

[58] For a discussion on the presumption favoring protecting drinking water and against exemption, see AE Comments, pp. 5-8.

[59] Responses to Comments, p. 16

[60] AE Comments, p. 16 (with references).

[61] Goebel, T. H. W. et al., "Wastewater Disposal and Earthquake Swarm Activity at the Southern End of the Central Valley, California," 43 *Geophys. Res. Lett.* (January 22, 2016).

[62] *Id.* at 7.

VII. Conclusion

This application is DOGGR's first submission of an aquifer exemption intended to legitimize illegal Class II well injection activity in California to EPA. For the reasons set forth above, however, DOGGR has failed to demonstrate that the aquifer meets federal and state criteria for exemption. In addition, DOGGR has not shown that it has the will or ability to effectively ensure that wastewater injection will not affect nearby water wells or beneficial use water. Furthermore, California's historic drought and need for water call into question the antiquated criteria used to determine whether groundwater should be sacrificed to the oil industry. The Center therefore asks that EPA protect the health and environment of Californians, especially those living near the AGOF, and deny this exemption.

Sincerely,

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Horsley Witten Group, Final Report, California Class II Underground Injection Control Program Review (June 2011)

Natural Resources Defense Council, Aquifer Exemption Comments (Sept. 21, 2015)

San Luis Obispo Planning, Arroyo Grande Oil Field Phase V Initial Study (2012)

Smith-Risner, Natalie, Aquifer Exemption Comment Letter to DOGGR (Dec. 16, 2015)

USEPA and DOGGR, Underground Injection Control Program, Memorandum of Agreement Between California Division of Oil and Gas and the United State Environmental Protection Agency, Region 9 (Sept. 9, 1982)

USEPA, Letter from Jane Diamond, Director, Water Division, EPA Region 9, to Jonathan Bishop, California State Water Resources Control Board, and Steven Bohlen, Division of Oil, Gas and Geothermal Resources (March 9, 2015)

Williams, Park A. et al., "Contribution of Anthropogenic Warming to California Drought During 2012-2014," Geophysical Research Letters, Vol. 42, Issue 16 (Aug. 28, 2015)

March 9, 2016

Via email and FedEx

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Re: Proposed Arroyo Grande Oil Field Aquifer Exemption: Request for Denial - Supplemental Letter

Dear Mr. Albright and Mr. Montgomery,

On February 25, 2016, the Center for Biological Diversity ("CBD" or "Center") sent you a letter requesting that the US Environmental Protection Agency (EPA) deny the request by the California Department of Conservation, Division of Oil, Gas and Geothermal Resources ("DOGGR") for an aquifer exemption for Class II injection wells in the Arroyo Grande oil field ("AGOF"), operated by Freeport McMoRan ("FMOG"). This letter supplements the letter of February 25, 2016, and a letter sent to EPA from the Center on February 11, 2016, requesting a formal rulemaking process under 40 C.F.R. section 145.32(b)(2), on the basis that the exemption is substantial, complex, and controversial.

In addition to the information provided in the previous letters, the Center maintains that the EPA must conduct environmental review under the National Environmental Policy Act ("NEPA"). Though the Center previously commented to DOGGR that its decision to submit the

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exemption for EPA approval was subject to environmental review under the California Environmental Quality Act ("CEQA),[1] DOGGR declined to perform this review.[2] Therefore, even though this discretionary approval is likely to significantly affect the environment, no Environmental Impact Report ("EIR"), Environmental Impact Statement ("EIS") or Environmental Assessment ("EA") has been prepared. Approval of this exemption without any environmental review violates CEQA and NEPA.

EPA's discretionary approval of an aquifer exemption would require an EIS under NEPA. NEPA, America's "basic national charter for protection of the environment," 40 C.F.R. § 1500.1(a), requires federal agencies to take a "hard look" at the environmental consequences of their actions before taking action. *Kleppe v. Sierra Club,* 427 U.S. 390, 410, n. 21 (1976); 40 C.F.R. § 1500.1(a). In this way, NEPA ensures that federal agencies "will have available, and will carefully consider, detailed information concerning significant environmental impacts" and that such information "will be made available to the larger [public] audience that may play a role in both the decision-making process and the implementation of the decision." *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 349 (1989).

To that end, NEPA requires federal agencies to prepare an EIS for all "major Federal actions significantly affecting the quality of the human environment." 42 U.S.C. § 4332(2)(C). NEPA's implementing regulations define "major federal action" to include the "[a]pproval of specific projects, such as construction or management activities located in a defined geographic area" and specify that "[p]rojects include actions approved by permit or other regulatory decision." 40 C.F.R. § 1508.18.

NEPA's implementing regulations also specify factors that must be considered in determining when a major federal action may significantly affect the environment warranting the preparation of an EIS. *See id.* § 1508.27(b). Specifically, in determining whether an action may have "significant" impacts on the environment, an agency must consider the "context" and "intensity" of the action. *Id.* § 1508.27. "Context" means the significance of the project "must be analyzed in several contexts such as society as a whole (human, national), the affected region, the affected interests, and the locality." *Id.* § 1508.27(a).

The intensity of the action is determined by considering the ten factors enumerated in the regulations, which include: (1) impacts that may be both beneficial and adverse; (2) the degree to which the proposed action affects public health or safety; (3) unique characteristics of the geographic area such as proximity to ecologically critical areas; (4) the degree to which the effects on the human environment are likely to be highly controversial; (5) the degree to which the possible effects on the human environment are highly uncertain or involve unique or

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[1] Comments on FMOG Arroyo Grande Oil Field Aquifer Exemption from Maya Golden-Krasner, Center for Biological Diversity (September 21, 2015) ("AE Comments"), pp. 11-12 (Attachment A to this letter).
[2] DOGGR, Responses to All Comments (Feb. 8, 2016), p. 14, *available at:* ftp://ftp.consrv.ca.gov/pub/oil/Aquifer_Exemptions/County/San_Luis_Obispo/Arroyo_Grande_Oilfield/Dollie_Sands_Pismo_Formation/Arroyo%20AE%20Response%20to%20ALL%20Comments%20Final%202-8-2016.pdf.

unknown risks; (6) the degree to which the action may establish a precedent for future actions with significant effects; (7) whether the action is related to other actions with individually insignificant but cumulatively significant impacts; (8) the degree to which the action may cause loss or destruction of significant scientific, cultural, or historical resources; (9) the degree to which the action may adversely affect a species listed under the Endangered Species Act ("ESA") or its critical habitat; and (10) whether the action threatens a violation of federal, state or local environmental laws. *Id.* § 1508.27(b)(1)-(10).

The presence of even just "one of these factors may be sufficient to require preparation of an EIS in appropriate circumstances." *Ocean Advocates v. U.S. Army Corps of Eng'rs*, 402 F.3d 846, 865 (9th Cir. 2005). If "substantial questions as to whether a project . . . may cause significant degradation of some human environmental factor," an EIS must be prepared. *Idaho Sporting Congress v. Thomas*, 137 F.3d 1146, 1149 (9th Cir. 1998). Accordingly, in order for a court to find that an EIS is warranted, "a plaintiff need not show that significant effects will in fact occur" only that there are "substantial questions whether a project may have a significant effect on the environment." *Nat. Resource Defense Council v. Winter*, 502 F.3d 859, 867 (9th Cir. 2007) (citations omitted).

Here, the approval of an aquifer exemption is a federal "regulatory decision" that will "significantly affect the quality of the human environment." This exemption would allow water that is currently federally protected under the Safe Drinking Water Act to be polluted by waste water, chemicals, and other injections from oil operations. As the Center enumerated in comments to DOGGR as well as letter to EPA, there are numerous unresolved questions about impacts on surrounding groundwater sources, including threats to water quality and water supplies for residents living near the oil field. Furthermore, this Aquifer Exemption has the potential to allow and create a myriad of significant environmental impacts--to water quality, public health, and wildlife, among others--none of which has been analyzed by FMOG, DOGGR, or any other agency. Indeed, operations at AGOF that use the produced water from the aquifer, filter it, and release the water into Pismo Creek affect the critical habitat of Federal and State endangered species--namely, the Southern California Steelhead Trout and Tidewater Goby.[3]

If EPA seeks to approve the exemption, it must first analyze the impact of the exemption on these species, as well as the impacts on water and air quality, public health, and other wildlife. This is especially the case because this exemption will facilitate a massive expansion of oil operations at AGOF. The Center maintains, as stated in its February 25, 2016 letter, that this application does not meet the Safe Drinking Water Act or California Public Resources Code

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[3] Freeport McMoRan, Application for Aquifer Exemption, Arroyo Grande Oil Field ("FMOG AE Application"), p. 21, *available at*: ftp://ftp.consrv.ca.gov/pub/oil/Aquifer_Exemptions/County/San_Luis_Obispo/Arroyo_Grande_Oilfield/Dollie_Sands_Pismo_Formation/Arroyo%20Grande%20Oilfield%20Edna%20Member%20Dollie%20Sands%20Pismo%20Formation%20Aquifer%20Exemption%20Application%20Complete.pdf.

criteria for aquifer exemptions.[4] At the very least, however, prior to sacrificing California's groundwater to the oil industry, EPA must examine the environmental impacts of this decision.

Sincerely,

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Center for Biological Diversity

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[4] 40 C.F.R. § 146.4; California Pub. Resources Code § 3131.

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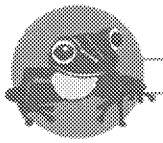
Attachment A:

Comment letter from Maya Golden-Krasner,
Center for Biological Diversity,
Dated September 21, 2015



CENTER for BIOLOGICAL DIVERSITY *Because life is good.*

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September 21, 2015

via electronic mail and U.S. mail to:

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Re: Freeport-McMoRan Oil & Gas, LLC, Arroyo Grande Oil Field Aquifer Exemption--Dollie Sands, Pismo Formation

To Whom it May Concern,

The Center for Biological Diversity ("the Center") submits comments in opposition to the recommendation of the Department of Conservation, Division of Oil, Gas and Geothermal Resources ("DOGGR") to exempt the Arroyo Grande Oil Field ("AGOF") aquifer in order to allow Freeport-McMoRan ("FM") to inject oil wastewater into the aquifer via Class II wells. In this time of historic drought, DOGGR, the water boards, and the U.S. Environmental Protection Agency (EPA) must tread extremely carefully in risking California's dwindling water resources. The aquifer exemption application fails to provide critical information that would allow DOGGR or EPA to even begin to make that determination, and fails to address vital questions regarding the health, safety, and welfare of the surrounding environment and residents. What is more, the little discussion that exists in the application entirely ignores FM's simultaneous project to add hundreds of new wells and increase oil production up to nine to ten times current production levels. Without further information regarding the potential impacts of this massive expansion project on the hydrogeology and chemistry of the existing oil field and aquifer, and on risks to

the area's groundwater resources, especially in a time of historic drought, the Center strongly recommends that DOGGR and EPA reject the Arroyo Grande aquifer exemption request.

I. Introduction

As DOGGR's issuance of up to 5,625 potentially unlawful Class II injection well permits shows,[1] DOGGR and the oil field operators have a history of ignoring laws and risking our water resources.[2] It is this history that has led to this aquifer exemption application. In 2011, the U.S. EPA commissioned a report on California's Underground Injection Control Program ("UIC Program") ("Horsley Witten Report"). That report found, *inter alia*, that state regulations did not protect aquifers as required by the SDWA and the State's primacy agreement.[3] The EPA requested that DOGGR provide an action plan quickly, requiring DOGGR to address the regulatory and other deficiencies by September 1, 2011.[4] To date, most of the issues identified in the Horsley Witten Report, including necessary amendments to regulations, remain unaddressed. On November 16, 2012, DOGGR acknowledged that it had been aware since 2009 that the UIC Program had failed to comply with state and federal law and regulations.[5] DOGGR stated then that a rulemaking would be commenced in 2013 to "update the UIC program, well construction, and plugging and abandonment regulations."[6] As of early February 2015, California had "identified approximately 2,500 wastewater disposal and enhanced oil recovery wells injecting into potentially non-exempt zones, 2,100 of which [were] still active. Of these, there are approximately 140 active wastewater disposal wells injecting into aquifers with Total Dissolved Solids (TDS) less than 3,000 mg/l, a key indicator under the federal Safe Drinking Water Act

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[1] Letter from Steve Bohlen, State Oil and Gas Supervisor, DOGGR, and Jonathan Bishop, Chief Deputy Director, State Water Resources Control Board, to Michael Montgomery, U.S. EPA (July 31, 2015) ("July 31, 2015 letter"), p. 1.

[2] Letter from Steve Bohlen, State Oil and Gas Supervisor, DOGGR, and Jonathan Bishop, Chief Deputy Director, State Water Resources Control Board to Jane Diamond, Director, Water Division, Region IX, U.S. EPA (February 6, 2015) ("February 6, 2015 letter"); Memorandum, CalEPA Review of UIC Program, from Matthew Rodriguez, Secretary of CalEPA to Cliff Rechtschaffen, Senior Advisor, Office of the Governor, and John Laird, Secretary, California Natural Resources Agency (March 2, 2015) ("March 2, 2015 CalEPA Memorandum"), *available at*: http://www.calepa.ca.gov/Publications/Reports/2015/UICFindings.pdf.

[3] Letter from David Albright, Manager, Ground Water Office, US EPA Region IX, to Elena Miller, State Oil and Gas Supervisor, DOGGR (July 18, 2011) ("July 18, 2011 letter").

[4] *Id.*

[5] Letter from Tim Kustic, State Oil and Gas Supervisor, DOGGR to David Albright, Manager, Ground Water Office US EPA Region IX, Response to the US EPA June 2011 Review of California's UIC Program (Nov. 16, 2012) ("November 16, 2012 letter").

[6] November 16, 2012 Letter, attachment: Response to the US EPA June 2011 Review of California's UIC Program, p. 1.

(SDWA) of higher quality water."[7] By July 2015, the number of illegal wells identified had expanded to more than 5,600.[8]

At the outset, the law requires that water be presumed protected under the SDWA unless exempted; therefore, all injection should cease immediately.[9] Given that California is currently in the fourth year of a historic drought, and communities are more dependent than ever on underground water resources, it is vital that DOGGR act to ensure our aquifers are protected from the toxic waste generated by oil and gas production processes. Overall, 85 percent of California's public water systems depend on groundwater for at least part of their drinking water, and smaller urban and rural areas depend entirely on groundwater.[10] California's reliance on groundwater increases during times of drought and will continue to increase with the growing demand from municipal, agricultural, and industrial sources, especially as surface water availability changes as a result of climate change and drought.[11] The most recent data available as of October 2014 shows that groundwater levels have decreased in many basins throughout the state since spring 2013, and more notably since spring 2010; basins with notable decreases in groundwater levels are in the Sacramento River, San Joaquin River, Tulare Lake, San Francisco Bay, **Central Coast**, and South Coast hydrologic regions.[12] Indeed, there is precedent on the Central Coast for a scenario in which drought causes a major increase in reliance on groundwater supplies: during the last major drought in the late 1980s, the City of San Luis Obispo began pumping groundwater for the first time in history, and by 1990 it received 40% of its water from groundwater.[13]

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[7] March 2, 2015 CalEPA Memorandum, p. 1.
[8] July 31, 2015 letter, p. 1
[9] 40 C.F.R. § 144.7(a); 42 U.S.C. § 300h(d)(2).
[10] State Water Resources Control Board, Report to the Legislature: Draft Communities that Rely on Contaminated Ground Water (Feb. 2012) ("SWRCB, 2012"), p. 6.
[11] SWRCB, 2012, p. 6; Memorandum from Howitt et al., UC Davis Center for Watershed Sciences, to California Department of Food and Agriculture (May 31, 2015) ("Howitt, 2015"), *available at:* https://watershed.ucdavis.edu/files/biblio/2015Drought_PrelimAnalysis.pdf.
[12] Cal. Department of Water Resources, "Public Update for Drought Response: Groundwater Basins with Potential Water Shortages, Gaps in Groundwater Monitoring, Monitoring of Land Subsidence, and Agricultural Land Fallowing (November 2014) ("DWR, 2014"), pp. 5, 11 (emphasis added), *available at:* http://water.ca.gov/waterconditions/docs/DWR_PublicUpdateforDroughtResponse_GroundwaterBasins.pdf.
[13] Halverson, Nathan, "What will happen to a sinking California? Just ask San Luis Obispo," *Grist* (June 24, 2015) (Halverson), *available at:* http://grist.org/climate-energy/what-will-happen-to-a-sinking-california-just-ask-san-luis-obispo/.

Even DOGGR now recognizes the need "to rethink the standard approach to produced water disposal in light of the increasing demand for groundwater."[14] DOGGR thus "recommends" that operators consider other options for produced water, such as treating and reusing the waste water for other uses, rather than go through "what could be a difficult, time consuming and, in some cases, unsuccessful process of proposing to increase or change the areal extent of currently exempted aquifers, or to exempt portions of new aquifers."[15] While the Center does not condone reusing oil wastewater for uses such as agriculture, DOGGR's recognition that measures other than allowing wastewater to be injected into California's precious resources must be found is correct. However, DOGGR, as the regulatory agency in charge of these injections, must approach these exemptions from the perspective that the protection of California's groundwater resources is of paramount importance, and must do far more than send unenforceable "recommendations". This is the only approach consistent with the federal Safe Drinking Water Act ("SDWA") and the State Oil and Gas Supervisor's duty to "supervise the drilling, operation, maintenance, and abandonment of wells and the operation, maintenance, and removal or abandonment of tanks and facilities attendant to oil and gas production … within an oil and gas field, so as to prevent, as far as possible, damage to life, health, property and natural resources; damage to underground oil and gas deposits from infiltrating water and other causes; loss of oil, gas or reservoir energy, and damage to underground and surface waters suitable for irrigation or domestic purposes by the infiltration of, or the addition of, detrimental substances."[16] As the current drought has shown us, the State of California does not have the luxury of being able to sacrifice its valuable water resources for the convenience of the oil and gas industry.

Perhaps the most egregious aspect of the AGOF exemption request in particular, however, is the fact that FM is simultaneously seeking to double its permitted oil production barrels per day (bpd) from 5,000 to 9,000 to10,000, which is up to a ten-fold increase in current production.[17] The State and federal regulators--charged with protecting California's precious

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[14] DOGGR, "Notice to Operators: A Strategy for Produced Water" (Sept. 9, 2015, *available at:* ftp://ftp.consrv.ca.gov/pub/oil/Notice_to_Operators/NTO_9-2015_A%20Strategy%20for%20Produced%20Water.pdf.

[15] *Id.*

[16] Cal. Pub. Res. Code § 3106(a).

[17] San Luis Obispo County Department of Planning and Building, Initial Study, Phase V Oilfield Expansion Conditional Use Permit (November 2012) ("Phase V Initial Study"), p. 2, *available at:* http://www.slocounty.ca.gov/Assets/PL/environmental/plains/Environmental/initialstudy.pdf; Price Canyon Oilfield

groundwater--should not even consider this exemption request unless and until the effects of this project on the aquifer and surrounding groundwater sources have been analyzed. If this willful disregard of a simultaneous proposed major oilfield expansion by the same applicant were not enough of a reason to deny this request, however, the State and US EPA must deny it because the burden is on the applicant to demonstrate it meets the state and federal criteria for an aquifer exemption, and this application does not meet that burden. It does not demonstrate that the aquifer is not and cannot be used as a source of drinking water, or that it is zonally isolated and will not affect other sources of water for domestic, agricultural, and other beneficial uses. It fails to analyze the risks to the integrity of the aquifer and the wells posed by earthquakes, subsidence, and other pressure changes, made all the more concerning given the proposal to increase the bpd oil production nearly ten times. For all of these reasons, this exemption must be denied.

II. Legal Requirements

A. Presumption is in Favor of Protecting Drinking Water, and Against Exemption

Congress passed the Safe Drinking Water Act ("SDWA") to protect public health by regulating and protecting the nation's public drinking water supply. The federal underground injection control program, part C of the SDWA, was established to safeguard underground drinking water sources endangered by underground injections.[18] The SDWA and its attendant regulations ("Federal Regulations") protect not only existing public water systems;[19] crucially, they also safeguard any drinking water source that supplies, or can reasonably be expected in the future to supply, any public water system.[20] In other words, the SDWA and the Federal Regulations preserve future sources of drinking water by prohibiting their contamination *before* they are drawn upon.

The primary purpose of the regulations promulgated pursuant to the Safe Drinking Water Act is to protect drinking water and potential sources of drinking water. It does not seek to balance the protection of drinking water and potential drinking water sources with industrial use

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Project (Freeport McMoran Oil & Gas) - DRC2012-00035, *documents available at:* http://www.slocounty.ca.gov/planning/environmental/environmentalnotices/pxp.htm.

[18] *Legal Envtl. Assistance Found., Inc. v. United States EPA*, 118 F.3d 1467, 1475-76 (11th Cir. 1997) (quoting House Report, H.R. Rep. No. 93-1185 at 29, reprinted in 1974 U.S.C.C.A.N. 6454, 6481).

[19] A public water system is a system for the provision of public water for human consumption through pipes or other constructed conveyances, which has at least 15 service connections or regularly serves at least 25 people. *See* 40 U.S.C. § 300f(4).

[20] 42 U.S.C. § 300h(d)(2).

of those sources. Rather, the statutory language, purpose and intent safeguard water sources from Class II well injection activities. As the court found in *United States v. King*,

> The injection provisions of the SDWA are "preventive." 1974 U.S.C.C.A.N. at 6463. Congress concluded that the most effective way to ensure clean drinking water was to prevent pollution of underground aquifers in the first place, rather than to clean up polluted aquifers after the fact. Under the SDWA, the danger posed by proposed injections to an underground aquifer is determined during the permitting process. As noted above, the SDWA puts the burden on a permit applicant to show that a proposed injection will not endanger an USDW. If an applicant fails to show that a proposed injection is safe, the SDWA requires that the permit be denied. That is, in the absence of a showing by the applicant that a proposed injection is safe, the SDWA presumes that the injection will endanger an USDW.[21]

Thus, here, the burden is on FM to prove that the aquifer will not endanger a USDW, and this application fails to do that.

For one, this application does not provide the specific constituents that will be injected into the aquifer, but oil waste water generally contains toxic contaminants that can endanger this aquifer as well as surrounding USDWs. Produced water from oil extraction contains not only naturally occurring chemicals and hydrocarbons, but also many of the same chemicals from the well stimulation along with contaminants mobilized from underground, in part via flowback fluid. In its recently-published report into hydraulic fracturing in California ("CCST Report"), the California Council of Science and Technology identified over 300 unique chemicals being used in hydraulic fracturing fluids in California.[22] Nearly one third of those chemicals did not have a Chemical Abstracts Service Registry Number (CASRN). Chemical additives reported without a CASRN cannot be fully evaluated for hazard, risk, and environmental impacts due to lack of specific identification.[23] The absence of any such evaluation means that it cannot be concluded that such chemicals will not cause harm. In the absence of a positive conclusion that a chemical will not cause harm, it must be concluded that they "may" cause harm. Accordingly, USDWs must be protected from contamination by chemicals without a CASRN. Of the chemicals used in hydraulic fracturing processes in California, "approximately one-half of chemicals used do not have publicly available results from standard aquatic toxicity tests. More

[21] *United States v. King*, 660 F.3d 1071, 1079 (9th Cir. 2011).
[22] California Council of Science and Technology, Potential Environmental Impacts of Hydraulic Fracturing and Acid Stimulations (Jul. 2015) ("CCST Report"), Vol. II, Ch. 2, p. 50.
[23] *Id.*

than one-half are missing biodegradability, water-octanol partitioning analysis, or other characteristic measurements that are needed for understanding hazards and risks associated with chemicals."[24] Again, in the absence of information demonstrating that these chemicals will not cause harm to human health, it must be concluded that these substances *may* cause harm, and therefore they must not enter a USDW.

A survey of chemical analyses reported by well stimulation companies posted to the DOGGR reporting website shows that benzene is detected in flowback fluid at high levels—on average, 700 times the federal drinking water limit.[25] In chemical analysis reports submitted to DOGGR, tests found flowback fluid contained, among other chemicals and elements, naphthalene, hexavalent chromium, selenium, strontium, and barium.

In addition to containing chemicals used in well stimulation, wastewater can contain many harmful chemicals in the produced water (naturally occurring water drawn up along with oil), including heavy metals such as lead, mercury, and arsenic; polycyclic aromatic hydrocarbons; and even naturally occurring radioactive material.[26] Benzene, an extremely toxic carcinogen, is a common constituent of oil and gas wastewater in California.[27] DOGGR's own study found benzene in produced water samples at concentrations at 3,600 times EPA's limit for drinking water.[28] All of these substances may adversely affect the health of a human.

As a result of the potential for injectate to harm USDWs, the environment, and human health, as well as the importance of water to sustain life, all potential sources of drinking water are by default protected; as stated above, all injection into any non-exempt portion of the aquifer is in violation of state and federal law and must cease immediately. In order to allow an aquifer to be polluted, active administrative processes must be undertaken to overcome the presumption

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[24] *Id.*

[25] Cart, J., *High Levels of Benzene Found in Fracking Wastewater*, Los Angeles Times, Feb. 11, 2015, *available at:* http://www.latimes.com/local/california/la-me-fracking-20150211-story.html#page=1; DOGGR, Well Stimulation Database, *available at:* http://maps.conservation.ca.gov/doggr/iwst_index.html; 40 C.F.R. § 141.61(a) (maximum contaminant level for benzene is 0.005 mg/L, or 5 ppb).

[26] While data gaps exist for chemical compositions of California produced water, studies of other oil fields have detected harmful chemicals. *See, e.g.*, Benko, K., "Produced Water in the Western United States: Geographical Distribution, Occurrence, and Composition," 25 *Environmental Engineering Science* 2 (2008); Pampanin, Daniela & Magne Sydnes, M., "Chapter 5: Polycyclic Aromatic Hydrocarbons a Constituent of Petroleum: Presence and Influence in the Aquatic Environment," *Hydrocarbon* (Vladimir Kutcherov and Anton Kolesnivikov eds. 2013) at 87.

[27] Gamache, Mark T., DOGGR, "Benzene in Water Produced from Kern County Oil Fields Containing Fresh Water" (1993), *available at:* ftp://ftp.consrv.ca.gov/pub/oil/publications/Open-file2.pdf.

[28] *Id.* at p. 11, Table 1 (finding produced water samples with up to 18.0 parts per million, up to 3,600 times greater than the EPA limit for drinking water (0.005 parts per million).

of protection. Section 144.7 of the Federal Regulations to the SDWA provides that the Director "shall" protect as underground sources of drinking water all aquifers, and parts of aquifers, that meet the definition of a USDW.[29] The obligation to protect USDWs arises whenever an aquifer meets the criteria of a USDW, regardless of whether the Director has not acknowledged the source as such.[30] An USDW can only be exempt from the default protections if the Director actively undertakes the required administrative process.[31]

B. Federal and State Requirements for Aquifer Exemptions

Procedurally, an exemption requires a two-step process: (1) an operator will propose to the state agency (DOGGR) that an aquifer be exempt, and (2) if DOGGR approves, it will propose the exemption to the EPA.[32] Both federal and state law lay out the conditions that must be met in order for DOGGR, the water boards, and EPA to consider whether to exempt an aquifer from the protections of the SDWA. DOGGR's decision to submit an aquifer exemption to EPA for approval is a discretionary action. Under the Federal Regulations, an aquifer or a portion of an aquifer cannot be exempted unless:

> (a) It does not currently serve as a source of drinking water; and
> (b) It cannot now and will not in the future serve as a source of drinking water because:
> (1) It is mineral, hydrocarbon or geothermal energy producing, or can be demonstrated by a permit applicant as part of a permit application for a Class II or III operation to contain minerals or hydrocarbons that considering their quantity and location are expected to be commercially producible.
> (2) It is situated at a depth or location which makes recovery of water for drinking water purposes economically or technologically impractical;
> (3) It is so contaminated that it would be economically or technologically impractical to render that water fit for human consumption; or
> (4) It is located over a Class III well mining area subject to subsidence or catastrophic collapse; **or**
> (c) The total dissolved solids content of the ground water is more than 3,000 and less than 10,000 mg/l and it is not reasonably expected to supply a public water system. . . .[33]

[29] 40 C.F.R. § 144.7(a).
[30] *Id.*
[31] 40 C.F.R. § 144.7(b).
[32] *Id.*; 40 CFR § 145.32.
[33] 40 CFR § 146.4 (emphasis added).

In other words, under the Federal Regulations, DOGGR and EPA cannot exempt an aquifer from the protections of the SDWA to allow Class II injection wells if the aquifer currently serves as a source of drinking water, can or could in the future serve as a source of drinking water, *or* if the water is between 3,000 and 10,000 mg/l TDS and reasonably expected to supply a public water system (If the water is under 3,000 mg/l TDS, if it could reasonably be expected to supply a public water system, the aquifer should not qualify for an exemption, because it is considered high quality water.)[34]

State law further delineates criteria for when an aquifer may be exempted to allow Class II injection wells. Under Section 3131 of the Public Resources Code,

> (a) To ensure the appropriateness of a proposal by the state for an exempted aquifer determination subject to any conditions on the subsequent injection of fluids, and prior to proposing to the United States Environmental Protection Agency that it exempt an aquifer or portion of an aquifer pursuant to Section 144.7 of Title 40 of the Code of Federal Regulations, the division shall consult with the appropriate regional water quality control board and the state board concerning the conformity of the proposal with all of the following:
>
> (1) Criteria set forth in Section 146.4 of Title 40 of the Code of Federal Regulations.
>
> (2) The injection of fluids will not affect the quality of water that is, or may reasonably be, used for any beneficial use.
>
> (3) The injected fluid will remain in the aquifer or portion of the aquifer that would be exempted. . . .[35]

"Beneficial uses" "include, but are not limited to: domestic, municipal, agricultural and industrial supply; power generation; recreation; aesthetic enjoyment; navigation; and preservation and enhancement of fish, wildlife, and other aquatic resources or preserves."[36] Thus, in addition to the federal criteria, DOGGR and the water boards must ensure that the aquifer is zonally isolated--that injection of fluids will entirely remain in the exempted portion of the aquifer and will not affect any water that is, or can reasonable be, used for any of these other beneficial uses.

III. Argument

A. The State and EPA Must Reject the AGOF Aquifer Exemption Request Because FM's Application Ignores a Foreseeable Major Expansion in the Number of

[34] March 2, 2015 CalEPA Memorandum p. 1.
[35] Cal. Pub. Res. Code § 3131.
[36] Cal. Water Code § 13050(f).

Wells, Well Pads, and Oil Production at the AGOF, Which Will Drastically Increase the Amount of Wastewater

FM is in the process of applying for a conditional use permit to increase oil production at the AGOF from the current approximately 1,000 barrels per day (bpd) of oil to up to 9,000-10,000 bpd--up to a nearly ten-fold increase in oil production ("Phase V expansion project").[37] The project would add 350 new wells and 100 replacement wells on 11 new well pads and 38 modified well pads, and will include both vertical and directional drilling.[38] In its initial study, the County of San Luis Obispo found that this project has the potential for significant impacts and impacts that require mitigation to, among other environmental resources: wildlife species and vegetation that are endangered or threatened by water degradation,[39] geology,[40] groundwater and hydrology.[41]

Even though it is currently in the application and environmental review process for this major expansion project, FM's aquifer exemption application fails to acknowledge it. The only place an expansion is contemplated at all is an introductory note indicating that "[c]urrent oil production averages 1,350 barrels of oil per day (bopd) and is estimated to exceed 6,000 bopd when the field is fully developed."[42] Yet, the impacts of even that much smaller expansion are not analyzed in the application.

There are too many questions that accompany this project that must be answered before the agencies can even begin to consider whether an aquifer exemption is warranted. Crucially among these are:

- Volume - How much extra wastewater will be produced? How much wastewater will move through the Water Reclamation Facility ("WRF") and ultimately be discharged into

[37] Freeport McMoRan Application for Aquifer Exemption, Arroyo Grande Oilfield ("FM Application"), p. 3; Phase V Initial Study, p. 2; San Luis Obispo County Department of Planning and Building, Scoping Meeting Presentation (Feb. 19, 2014), *available at:* http://www.slocounty.ca.gov/Assets/PL/environmental/plains/Environmental/Scoping+Meeting/Presentation+2-19-14.pdf.

[38] Phase V Initial Study, p. 2.

[39] Phase V Initial Study, pp. 13-18. *See also* California Department of Fish and Wildlife, Letter in Review of the Phase V Environmental Impact Report Notice of Preparation (January 8, 2013), *available at:* http://www.slocounty.ca.gov/Assets/PL/environmental/plains/Environmental/Notice+of+Preparation+(NOP)/Responses+Received/CADFW.pdf.

[40] Phase V Initial Study, pp. 21-22.

[41] Phase V Initial Study, pp. 41-48.

[42] FM Application, p. 3.

Pismo Creek, and can the WRF handle that much water?[43] Will the NPDES permit need to be modified in order to discharge more water into Pismo Creek? How much will be reinjected into the aquifer? What is the volume of injected water the aquifer can handle, and how will this affect the ongoing "dewatering" project?[44] Is there a risk of subsidence from groundwater depletion, including from the dewatering project?

- Groundwater flow, hydrology, and zonal isolation - How will this extraction affect the aquifer pressure and resulting risks for changes in pressure, subsidence, and groundwater flow? What is the potential for the hundreds of new oil wells, including directional drilling wells, to induce fractures and earthquakes that can alter the groundwater flow and provide new pathways for polluted water to enter nearby drinking wells? Will it affect the volume and/or pressure of water that feeds nearby water wells?
- Toxicity - What chemicals will be injected into the aquifer to produce this oil, and what will be the chemical composition of the injection water be?

These are just some of the questions must be answered before the State and US EPA, in order to be diligent, law-abiding regulators, can even consider this exemption request.[45]

Moreover, it is likely that this aquifer exemption is intricately tied to the Phase V project in order to accommodate the large increase in the amount produced water. This exemption request is a discretionary action on the part of DOGGR,[46] and should therefore be subject to environmental review.[47] To the extent this exemption is necessary for Phase V to move forward, it has been improperly piecemealed under the California Environmental Quality Act (CEQA) from the Phase V project, and must be analyzed in the Environmental Impact Report for that

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[43] The WRF was built to handle a throughput of 20,000 bpd to accommodate a Phase IV expansion permitted output of 5,000 bpd of oil. PXP Produced Water Reclamation Facility Subsequent Environmental Impact Report (2008), ch. 3, "Project Description," *available at:* http://www.slocounty.ca.gov/Assets/PL/environmental/plains/Historical+Documents/2008+-+RO+Water+System+EIR/EIR+Documents/06+Chapter+3.0+Project+Description.pdf. This expansion project would double the permitted output.

[44] FM Application, pp. 17, 21 (describing the project to dewater the reservoir to increase oil output).

[45] *See generally,* EPA Aquifer Exemption Memorandum; DOGGR and SWRCB, "Aquifer Exemption Process Guidance Document" (April 10, 2015) ("DOGGR Aquifer Exemption Guidance").

[46] EPA Aquifer Exemption Memorandum, p. 3; Cal. Pub. Res. Code § 3131(c) ("Following review of the public comments, and only if the division and state board concur that the exemption proposal merits consideration for exemption, the division shall submit the aquifer exemption proposal to the United States Environmental Protection Agency.").

[47] CEQA applies to "discretionary" projects. Cal. Pub. Res. Code § 21080(a). CEQA Guidelines define discretionary projects as government actions requiring "the exercise of judgment, deliberation or decision," (CEQA Guidelines § 15357), and further provide, in part, that "CEQA applies in situations where a governmental agency can use its judgment in deciding whether and how to carry out or approve a project." CEQA Guidelines § 15002(i).

project before it can move forward.[48] Even if the decision to exempt the aquifer in order to allow wastewater injection is a separate project, it alone has the potential to create a myriad of significant environmental impacts--to water quality, public health, and wildlife, among others--none of which has been analyzed in FM's application. For these reasons, before DOGGR and the water boards--who have responsibility to analyze the impacts and determine whether to submit the proposed exemption to EPA--can approve this project for submittal they must conduct environmental review under CEQA.[49]

B. EPA Must Reject the AGOF Aquifer Exemption Request Because FM Has Failed to Demonstrate that it Meets the Federal and State Criteria for Exemption

If the fact that the application ignores this proposed major expansion was not alone enough of a reason to reject the request, the exemption must be denied because the application fails to adequately analyze foreseeable risks to groundwater even given current operations. The risks of contamination of beneficial use waters from both oil extraction activities and from re-injecting produced water from oil and gas production are huge because of, among other reasons:

- data gaps in California's understanding of its groundwater quality and hydrogeology[50] that this application does little to supplement or rectify;
- the increasing number and depth of water supply wells in response to climate change and droughts;[51]
- the increasing amount of recent oil and gas extraction activities and injection permitting, including the instant Phase V expansion project;[52]
- data gaps and dangers associated with the chemistry of and exposure to toxic chemicals involved in oil and gas produced water and wastewater injection, [53] mirrored in this

[48] *See* CEQA Guidelines § 15126.2(a) (requiring an EIR to identify all significant effects on the environment); CEQA Guidelines § 15378 requiring analysis of the "whole of an action"; *Orinda Assn v. Board of Supervisors* (1986) 182 Cal.App.3d 1145, 1171 ("CEQA cannot be avoided by chopping up proposed projects into bite-size pieces which, individually considered, might be found to have no significant effect on the environment or to be only ministerial.").

[49] Cal. Pub. Res. Code § 21065 and CEQA Guidelines § 15378 (defining "project" broadly). *See Bozung v. Local Agency Formation Commission* (1975) 13 Cal.3d 263, 283 ("The purpose of CEQA is not to generate paper, but to compel government at all levels to make decisions with environmental consequences in mind. CEQA does not, indeed cannot, guarantee that these decisions will always be those which favor environmental considerations. At the very least, however, the People have a right to expect that those who must decide will approach their task neutrally, with no parochial interest at stake.")

[50] CCST Report, Vol. II, Ch. 2, pp. 51, 138, 152, 160, 165-166

[51] *See e.g.,* SWRCB, 2012; Howitt, 2015; DWR, 2014.

[52] Phase V Initial Study.

application in the lack of data regarding the chemicals injected into the oil wells and in resulting produced and injected water;

- potential changes to the water flow paths that contribute to beneficial use reservoirs, including from changes in pressure, earthquakes, and subsidence which can occur naturally or induced by oil production and injection;[54] and,
- the existence of known and unknown abandoned wells, compromised wells, and other potential pathways of contamination.[55]

The AGOF aquifer exemption application does not and cannot demonstrate that these risks are minimal here, because it has not submitted sufficient data to make that determination. FM therefore fails to demonstrate that the aquifer meets state and federal requirements for an aquifer exemption. In addition, as demonstrated below, even though the burden is on FM to demonstrate that the aquifer meets the criteria and the legal presumption is in favor of protecting groundwater, the analysis in the application is so cursory and vague that it cannot meet this burden. As a result, the exemption request must be rejected.

1. FM Has Not Demonstrated That the Aquifer is and Will Remain Zonally Isolated (Cal. Pub. Res. Code § 3131(a)(3))

The California Public Resources Code requires exempted aquifers to be zonally isolated such that the injection of fluids will not affect water that is, or may reasonably be, used for any beneficial use.[56] DOGGR's Aquifer Exemption Guidance confirms that

> State Water Board staff will evaluate the information contained in the Aquifer Exemption Application as to whether or not the proposed injection will likely affect current or potential future beneficial uses of water. If for example, there is an aquifer that is currently being used, or could be used for beneficial purposes in the area where there may be a hydrological connection to the injection zone, and the injection could have an impact on this or other beneficial uses, the State will not pursue and aquifer an exemption. Demonstration of a lack of hydrologic connection is critical to pursue an aquifer exemption.[57]

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[53] CCST Report, Vol. II, Ch. 2, pp. 50, 82, 87, 96-98, 115, 150, 156-158.
[54] CCST Report, Vol. II, Ch. 2, pp. pp. 104-109, 117-121, 124, 125-126, 151, 165.
[55] CCST Report, Vol. II, Ch. 2, pp. 104-109, 122-125, 159; United State Government Accountability Office (US GAO), "EPA Program to Protect Underground Sources from Injection of Fluids Associated With Oil and Gas Production Needs Improvement," Report to Congressional Requesters (GAO-14-555, June 2014) ("GAO Report"), pp. 23-24.
[56] Cal. Pub. Res. Code §§ 3131(a)(2), (3).
[57] DOGGR, Aquifer Exemption Guidance, p. 4.

The Federal Regulations confirm this requirement, given that the aquifer will be used for Class II wells if exempted: all new Class II wells must be sited "in such a fashion that they inject into a formation which is separated from any USDW by a confining zone that is free of known open faults or fractures within the area of review."[58]

In addition, the injection of chemical-laden fluid into an area not zonally isolated from sources of drinking water may be contrary to Proposition 65.[59] Proposition 65 provides that "[n]o person in the course of doing business shall knowingly discharge or release a chemical known to the state to cause cancer or reproductive toxicity into water or onto land where such chemical passes or probably will pass into any source of drinking water, notwithstanding any other provision or authorization of law."[60] Many of the chemicals found in flowback fluid are included by the State on the list of chemicals known to cause cancer or reproductive toxicity. Accordingly, the injection of flowback fluid in circumstances where there is not zonal isolation from drinking water sources may result in a violation of Proposition 65.

DOGGR and EPA, therefore, must not grant any exemptions where zonal isolation cannot be guaranteed. Complementing this limitation on DOGGR's power to grant authorizations to inject, the federal regulations provide that:

> [n]o owner or operator shall construct, operate, maintain, convert, plug, abandon, or conduct any other injection activity in a manner that allows the movement of fluid containing any contaminant into underground sources of drinking water, if the presence of that contaminant may cause a violation of any primary drinking water regulation under 40 CFR part 142 or may otherwise adversely affect the health of persons. **The applicant for a permit shall have the burden of showing that the requirements of this paragraph are met.**[61]

Accordingly, the burden of demonstrating zonal isolation must be placed on permit applicants.

Here, that burden has not been met. FM claims in its application that the aquifer in which injection will take place is zonally isolated and poses little risk to nearby wells or groundwater. The application itself fails to prove this, however, and in fact, there are indications that pathways to other sources of water already exist. For example, there is a hydrologic connection between the aquifers of Edna Valley and Price Canyon.[62] The application also notes "some

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[58] 40 CFR § 146.22(a).
[59] Cal. Health & Safety Code §§ 25249.5 *et seq.*
[60] Cal. Health & Safety Code § 25249.5.
[61] 40 C.F.R. § 144.12 (emphasis added).
[62] FM Application, p. 19; Appendix G-1-1, Review of DWR Well Completion Reports by Cleath-Harris Geologists, Inc. (June 25, 2015), p. 2.

interconnectivity between certain layers of the reservoir."[63] This information alone dooms the application.

Previous statements and project studies have also contradicted the assertion that this aquifer is zonally isolated. The initial study for the Phase V expansion project--to add up to 350 new wells and 100 replacement wells in order to double the permitted daily oil production (and increase the permitted product up to ten times more than what is currently produced)--states that "[a]s this formation is relatively close to the surface, potential impacts increase to nearby potable groundwater tables."[64] The Final Environmental Impact Report for the previous Phase IV oil well expansion project on site also noted the potential for injection wells at this site to impact other beneficial and potable groundwater: "[w]astewater generated through the petroleum recovery process would be reinjected into wastewater injection wells. This wastewater reinjection could impact shallow groundwater supplies if the wastewater came in contact with groundwater used for domestic purposes. If this occurred, the water quality of down-gradient public and municipal water production wells could be degraded."[65] Indeed, at the Scoping Meeting on the Phase V oil production expansion project, neighbors argued that they were "'[h]aving problems with groundwater wells in this area.' 'A number of residences have had to redrill water wells.'"[66] Previous comments on the Phase IV expansion EIR and Addendum also indicated that reports have shown a lack of zonal isolation.[67]

Additionally there are further reasons--none of which are analyzed in this application--that the hydrology in this subbasin is more interconnected and complex than FM contends. For instance, changes in pressure during oil extraction--or, in this case, purposeful, gradual

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[63] FM Application, p. 13.
[64] Phase V Initial Study.
[65] San Luis Obispo County Department of Planning Building, and Padre Associates, Inc., Final Plains Exploration and Production Phase IV Development Plan Environmental Impact Report (September 2004) ("Phase IV EIR"), section 5.7.2.3, *available at:* http://www.slocounty.ca.gov/Assets/PL/environmental/plains/Historical+Documents/2004+-+Phase+IV+EIR/phpEIR2004.pdf.
[66] Freeport-McMoRan Conditional Use Permit EIR Scoping Meeting Comments from February 19, 2014 Scoping Meeting ("Phase V Scoping Meeting Comments"), p. 3, *available at:* http://www.slocounty.ca.gov/Assets/PL/environmental/plains/Environmental/Scoping+Meeting/Scoping+Meeting+Summary.pdf.
[67] Letter and fax from John J. Harris, Richards, Watson, and Gershon, to Ellen Carroll, San Luis Obispo County Department of Planning and Building, and County Board of Supervisors re: Further Comments Re Helen Hale Appeal of Planning Commission Approval of Conditional Use Permit D010386D-Plains Exploration & Production Company Project - Arroyo Grande Oil Field (June 27, 2005) ("Harris Fax").

dewatering of the reservoir--can cause water flow to divert or change direction.[68] In addition, drilling itself, hydraulic and steam fracturing, and other types of production at any stage can create conduits to previously isolated sources of water.[69] Existing, older, unused wells can create pathways as well.[70] Despite the fact that the application indicates that there are approximately 300 non-operating wells at the oil field,[71] the application fails to analyze the potential risk of unused wells creating new hydrologic pathways and connections to other groundwater sources.

Furthermore, the application fails to analyze the risk that earthquakes will create new pathways to other groundwater sources, and damage wells. Known and unknown faults can be conduits for fluid migration.[72] In fact, the Federal Regulations require that all new Class II wells be sited "in such a fashion that they inject into a formation which is separated from any USDW by a confining zone that is free of known open faults or fractures within the area of review."[73] The Arroyo Grande fault borders the proposed exempted area and is noted as a boundary to ensure zonal isolation, and there are other faults in the area as well.[74] The application, however, inexplicably contains no seismic analysis of this subbasin, or any analysis of potential changes in groundwater movement as a result of earthquakes that may occur. There is no analysis of potential impacts to this water if that fault shifts. What is more, oil and gas activity itself, including from wastewater injection, can activate faults and trigger earthquakes.[75] As a 2014

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[68] FM Application, pp. 17, 21 (dewatering). *See also,* Verweij, J. M., *Hydrocarbon Migration Systems Analysis*, (Amsterdam: Elsevier Science Publishers B.V., 1993), p. 52 ("Changing groundwater pressure conditions affect directly the system of groundwater flow in the basin. In addition, the directions of groundwater flow may also be influenced indirectly by the tectonically increasing groundwater pressure.")

[69] CCST Report, Vol. II, Ch. 2, pp. 104-109.

[70] CCST Report, Vol. II, Ch. 2, pp. 105, 107, 109, 122-123.

[71] FM Application, p. 3 ("Today there are about 260 wells in operation. To date, about 560 wells have been drilled. . . .").

[72] CCST Report, Vol. II, Ch. 2, pp. 125-126.

[73] 40 C.F.R. § 146.22(a). *See also* CCST Report, Vol. II, Ch. 2, p. 151 ("Site characterization requirements include a confining zone free of known open faults or fractures that separates the injection zone from underground sources of drinking water. . . .").

[74] Phase IV EIR, section 5.7.1.2.

[75] California Council on Science and Technology Lawrence Berkeley National Laboratory Pacific Institute, *Advanced Well Stimulation in California,* "Executive Summary" (August 28, 2014) ("2014 CCST Report"), pp. 41, 269-275, *available at*: http://ccst.us/publications/2014/2014wstES.pdf. Further study is needed as well. "[A]reas of the southern San Joaquin, Ventura, Santa Clarita and Santa Maria basins, where active water disposal wells are concentrated at present (Figure 5-10), have relatively high rates of seismicity in the 2-5 magnitude range. While undoubtedly most of these earthquakes are naturally-occurring, detailed study of the seismicity in relation to fluid injection will be needed to assess the likelihood that a proportion of the events in these areas are induced." 2014 CCST Report, pp. 275-6. *See also* Hamilton, Douglas H. and Richard L. Meehan, "Ground Rupture in the Baldwin Hills," *Science*, vol. 172, no. 3981 (April 23, 1971), pp. 333-344; Brodsky, Emily and Lisa J. Lajoie, "Anthropogenic Seismicity Rates and Operational Parameters at the Salton Sea Geothermal Field," *Science*, vol. 341 (Aug. 2, 2013); Ellsworth, William, "Injection-Induced Earthquakes," *Science*, vol. 341 (July 12, 2013).

report noted: if "produced water is disposed of by injection and not handled through an expansion of water treatment and re-use systems, it could increase seismic hazards";[76] yet, the application contains no analysis of the potential for such activity to trigger or increase the risk of earthquakes here. Without a comprehensive analysis of the risk that earthquakes--natural or induced--will aggravate, widen, extend or otherwise modify existing faults or create new ones that then provide conduits for pollutants to travel out of the aquifer into surrounding groundwater, this application cannot move forward.

FM cannot, therefore, show that this aquifer is, and will be, zonally isolated. As current and previous environmental review records have noted, there is potential for injected wastewater to affect nearby potable groundwater and municipal water sources; and, as further described below, there are over 100 water wells within one mile of the oil field. Moreover, the application does not analyze the potential for changes in pressure, earthquakes, and unused wells to open new connections and redirect water flow. There are, therefore, real, foreseeable risks that the wastewater injected into the aquifer will affect other beneficial and drinking water sources, and without any analysis of these risks, the State and EPA cannot approve this exemption based on the application before it.

2. *FM Has Not Demonstrated That the Aquifer is Not Now Nor Could be in the Future Used for Drinking Water, or Supply a Public Water System (40 C.F.R. § 146.4(a), (b), (c)), or That Exemption and Injection will Not Affect Other Sources of Water Used for Drinking Water or Other Beneficial Uses (Cal. Pub. Res. Code § 3131(a)(2))*

This lack of analysis and information is especially alarming given that there are many groundwater supply wells very near the proposed exempted area, though, again, the analysis of the potential impact on these water supplies is not comprehensive enough to overcome the presumption in favor of protecting groundwater. The groundwater in the aquifer contains less than 3,000 mg/l TDS (and in some cases less than 1,000 mg/l),[77] which means that without the produced water chemicals injected into the aquifer, there is reason to believe it could be treated and used to supply a public water system.[78] Indeed, in a consultant's sampling of well W-1,

[76] 2014 CCST Report, p. 41.
[77] FM Application, Appendix D 1-a.
[78] *See e.g.,* March 2, 2015 CalEPA Memorandum, p. 1, noting less than 3,000 mg/l as a key indicator of higher quality water.

located in the northern portion of the AGOF just north of the Arroyo Grande fault, the consultant states that with "the appropriate treatment, groundwater could be utilized as a drinking water source."[79] In fact, San Luis Obispo County is among the top ten counties in California in terms of the number of communities in the county that rely on contaminated groundwater (treated prior to consumption) as a primary drinking water source.[80]

FM and its consultants acknowledge there are over 100 water wells within one mile of the oil field, "most" of which are in "separate sub-basins"--*but apparently not all.*[81] Most of these wells, in fact, tap into the Pismo Formation, which comprises the proposed exempted area.[82] In addition, FM's consultant examined generally what wells were within a mile of the oil field, but not necessarily within the boundaries of the proposed exemption, and did not disclose the exact locations of the wells it included.[83] Without exact well locations and depths, which are not provided here, it is not possible to determine whether others are drawing on this aquifer for water supplies, or whether this aquifer could be affecting other sources of water. In fact, one cross section in the application indicates water wells within a few feet of the proposed area.[84] DOGGR's Aquifer Exemption Guidance Document requires applicants to submit "[m]aps showing the locations of any and all water supply, injection, production, or monitoring wells that could have a hydrologic connection with the proposed exempted aquifer. This survey should include all active, inactive, idle, or plugged and abandoned wells within the study area, including any known faults and formation contacts."[85] EPA's Aquifer Exemption Checklist suggests that the application include maps and tables of "each of the inventoried water wells showing: Well Name/#, Owner, (Private/Public), Contact information, Purpose of well (Domestic, irrigation, Livestock, etc.), depth of source water, name of aquifer, well completion data, age of well (if known), and the primary source of well data." In addition, the application should include a map with "arrow(s) to indicate the direction and speed of GW in the aquifer proposed for

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[79] FM Application, Appendix G 1-2.
[80] SWRCB, 2012, p. 10.
[81] FM Application, p. 9; FM Application, Appendix G-1-1, DWR Well Review by Cleath-Harris Geologists, Inc. (June 25, 2015), p. 1; FM Application, Appendix I-1-2, Monitoring Wells Map.
[82] FM Application, Appendix G-1-1, DWR Well Review by Cleath-Harris Geologists, Inc. (June 25, 2015), p. 5; *see e.g.,* FM Application, Appendices A.7.a. and A.7.a.1.
[83] FM Application, Appendix G-1-1, DWR Well Review by Cleath-Harris Geologists, Inc. (June 25, 2015), attached maps.
[84] FM Application, Appendix A.7.a.1; FM Application, Appendix I-1-2.
[85] DOGGR, Aquifer Exemption Guidance, pp. 7, 8.

exemption."[86] Yet aside from a cross section diagram pointed out there are nearby ranch wells and a vague bubble map noting that there are wells within a mile of the oil field that draw from roughly the same area,[87] the application fails to provide any other data on the direction of groundwater flow or specific characteristics of nearby wells.

Nor does the application provide samples from these nearby wells, many of which are used for domestic use and/or irrigation. This is even more concerning given that neighbors have, in fact, described problems with their water wells: "'Having problems with groundwater wells in this area.' 'A number of residences have had to redrill water wells.' 'Some landowners in the area have problems with oil intrusion into their groundwater wells.'"[88] The application must, at a minimum, include a detailed, specific map, with latitudinal and longitudinal coordinates, that shows all drinking water wells within at least a two-mile radius of margins of the proposed exemption area. It addition, it must include a comprehensive well survey, including an analysis of the wells' water chemistries, depth screened intervals, and pumping rates.

As DOGGR acknowledges, because California is experiencing a devastating drought, drilling new and/or deeper wells is becoming much more common.[89] In its own Aquifer Exemption Guidance Document, DOGGR notes that that because "some water supply wells are being drilled increasingly deeper, supporting data must be current and accurate."[90] Groundwater in agricultural areas of the State, including the coastal regions, is particularly vulnerable during a drought because it is used to replace unavailable surface water supplies for agriculture, which reduces available water for both agricultural and potable use purposes. Increased pumping already stresses this "last resort" resource because it decreases groundwater levels below wells ("overdraft"), requires more and deeper wells, reduces groundwater quality (by drawing waters from more sources increasing the likelihood of cross-contamination), increases land subsidence (irreversibly reducing the storage capacity of the aquifer network), and threatens drinking water supplies to the many communities that depend mostly or entirely on groundwater for their potable water supply.[91] Newly deepened wells reduce the water pressure in existing shallow wells, forcing nearby users to also drill deeper wells as the existing wells risk running dry. In

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[86] EPA Aquifer Exemption Memorandum (attachment: Aquifer Exemption Checklist), C-1.
[87] *See* FM Application, Appendix G 1-1.
[88] Phase V Scoping Meeting Comments, p. 3.
[89] DOGGR, Aquifer Exemption Guidance, p. 5.
[90] *Id.*
[91] *See generally*, DWR, 2014.

addition, Californians have been "forced . . . to use water of lesser quality to meet their needs."[92] This increased pumping and decreased surface water supplies makes any existing aquifers that are available for potential use – in agriculture or as a drinking source – that much more valuable during the current drought. Thus, here, even if fluid injection is at a minimum of 450 feet from the surface, as the application states, there is no guarantee that nearby well owners won't drill at least that deep, or drill new wells, into the same Edna Member, Dollie Sands and/or Pismo Formation, to access water.

In addition, at the same time FM is pursuing a massive expansion of its oil field operations and production, King Ventures, Inc. is pursuing the annexation to Pismo Beach and development of nearly 1,700 acres in the Price Canyon area.[93] This new development will need water. Oil development and residential development are going to increasingly collide over water resources, What is more, this development could have significant impacts on Pismo Creek and surrounding areas.[94] The County, DOGGR, the water boards, and the Department of Fish and Wildlife, the Department of Water Resources, and other environmental and land use agencies need to conduct a much more in-depth analysis of how to protect this area, rather than haphazardly sacrificing California's dwindling water and environmental resources to the oil industry.

Finally, there is evidence that water from the Arroyo Grande aquifer is, in fact, already used for drinking water and for municipal water systems. Groundwater from the Arroyo Grande aquifer is imported into the Pismo Creek Watershed.[95] The produced water that is filtered through the WRF is discharged into Pismo Creek. Pismo Creek helps recharge the Santa Maria water basin: "Natural recharge to the basin comes from seepage losses from the major streams, percolation of rainfall, and subsurface flow . . . Percolation of flow in Pismo Creek provides recharge for the northern portion of the basin."[96] The Santa Maria Water Basin is the "principal

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[92] DOGGR, Aquifer Exemption Guidance, p. 5; Krieger, Lisa M., "California Drought: San Joaquin Valley Sinking as Farmers Race to Tap Aquifer," *Mercury News* (August 19, 2015), *available at:* http://www.mercurynews.com/drought/ci_25447586/california-drought-san-joaquin-valley-sinking-farmers-race.

[93] Central Coast Salmon Enhancement on Behalf of the Pismo Creek/Edna Area Steering Committee, Pismo Creek / Edna Area Watershed Management Plan, Prepared for the California Department of Fish and Game (March 2009) ("Pismo Creek Watershed, 2009"), p. 85.

[94] *Id.*

[95] Coastal San Luis RCD and Upper Salinas - Las Tablas RCD, San Luis Obispo County Watershed Management Planning Project, Phase 1 (January 2014), Pismo Creek Watershed, Section 3.2.4.7, p. 344, *available at*: http://www.us-ltrcd.org/wp-content/uploads/2014/02/IRWM-Report.pdf.

[96] California's Groundwater, Bulletin 118, Central Coast Hydrologic Region California's Groundwater

source of water for thousands of residents and landowners."[97] As a result, the aquifer is currently a source of drinking water and other beneficial uses, and cannot be exempted from the SDWA.

IV. Conclusion

Because this application fails to account for FM's simultaneous major expansion project, and because it fails to include even the most basic information needed to evaluate its consistency with California and federal law, DOGGR and EPA must reject it. Contrast, for instance, this application with EPA's review and approval of an aquifer exemption request in another case. There, in reaching its decision, EPA evaluated a number of factors, including: "(1) whether the 6.7 acre area meets the agency's criteria for exempted aquifers, (2) the various comments received from interested groups and individuals, (3) the impact of the proposed mining project on the environment in general and on surrounding sources of drinking water in particular, (4) the impact of the proposed mining project on human health, (5) restoration of the mining site and removal of contaminants from the exempt aquifer area, and (6) reasonable alternatives to the exemption as well as alternatives to the type of mining proposed by Wyoming Fuel Company."[98] Here, the application did not provide any information on the impact of the proposed exemption on the environment in general, on surrounding sources of drinking water, on human health, or any alternatives to the exemption. Nor did the application discuss restoring the site; rather, it entirely ignored the fact that the applicant is simultaneously proposing to expand it.

Finally, even if, despite these reasons, the State and EPA still believe they should grant the exemption, they should not grant it until California's new Underground Injection Control (UIC) program regulations have been adopted. Without knowing what the requirements and mitigation measures for injection will be, there is no way to analyze how or whether continuing to allow illegal injection into the aquifer could migrate, harm the environment, or degrade nearby water wells. As a result, unless and until FM has submitted a constructive and comprehensive application that actually proves the AGOF aquifer meets the standards for an exemption, and unless and until the State has finalized its UIC program regulations, the application must be rejected and injection into the non-exempt portions of the AGOF must cease immediately.

Santa Maria River Valley Groundwater Basin (last update, 2/27/04), citing Cal. Dept. Water Resources (DWR), Water Resources of the Arroyo Grande - Nipomo Mesa, 2002.

[97] *City of Santa Maria v. Adam* (2012) 211 Cal. App.4th 266, 280.

[98] *Western Nebraska Resources Council v. Environmental Protection Agency*, 793 F.2d 194, 200 (8th Cir. 1986).

Sincerely,

Maya Golden-Krasner
Staff Attorney, Climate Law Institute
Center for Biological Diversity

May 6, 2016

Via electronic mail and certified mail, return receipt requested

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Re: Proposed Arroyo Grande Oil Field Aquifer Exemption: Endangered Species Act Compliance Regarding the Federally Endangered Pismo Clarkia and Other Listed Species

Dear Mr. Albright and Mr. Montgomery:

On February 24, 2016, the Center for Biological Diversity ("the Center") sent you a letter urging the U.S. Environmental Protection Agency ("EPA") to deny the request by the California Department of Conservation, Division of Oil, Gas and Geothermal Resources ("DOGGR") for an aquifer exemption for Class II injection wells in the Arroyo Grande oil field ("AGOF"), operated by Freeport McMoRan Oil & Gas ("FMOG"). As outlined in the letter, the EPA's denial of the aquifer exemption request is fully warranted because DOGGR and FMOG have failed to demonstrate that the aquifer meets federal and state criteria for the exemption. Subsequently, on March 9, 2016, the Center sent you a supplemental letter requesting the EPA to conduct environmental review on the proposed exemption under the National Environmental Policy Act ("NEPA"); any approval of the exemption without such review would violate NEPA. The Center also sent you a letter, dated February 11, 2016, requesting that the EPA undergo a formal rulemaking process under 40 C.F.R. section 145.32(b)(2), on the basis that the aquifer exemption is substantial, complex, and controversial.

For the reasons set forth in the prior letters, the EPA should immediately deny DOGGR's request for the aquifer exemption for FMOG's Class II injection wells in the AGOF. However, in the case that the EPA seeks to approve the aquifer exemption, the EPA is legally required to comply with the federal Endangered Species Act ("ESA") and, prior to any federal exemption approval, engage in Section 7 ESA consultation with respect to the federally endangered Pismo clarkia and numerous other ESA-listed species found on or nearby the project site of the proposed aquifer exemption. Failure to engage in consultation on the impacts of the aquifer exemption on these federally listed species violates the procedural requirements of Section 7(a)(2) of the ESA, and EPA's substantive duty to ensure against

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jeopardy of these listed species and the adverse modification of their habitats. Any such ESA violation is subject to citizen suit pursuant to Section 11(g) of the ESA.[1]

I. LEGAL BACKGROUND

Congress passed the Endangered Species Act, 16 U.S.C. §§ 1531-44 ("ESA"), in response to growing concern over the extinction of plants, fish, and wildlife,[2] and recognized that certain species "have been so depleted in numbers that they are in danger of or threatened with extinction."[3] Accordingly, a primary purpose of the ESA is "to provide a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved, [and] to provide a program for the conservation of such . . . species."[4]

To reach these goals, Section 9 of the ESA generally prohibits any person, including any federal agency, from "taking" any endangered species.[5] The term "take" is statutorily defined broadly as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct."[6] The definition of "harm" has been defined broadly by regulation as "an act which actually kills or injures wildlife. Such act may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering."[7] Courts have found federal agencies liable for take of listed species—both endangered and threatened—where an agency authorized activities resulted in the killing or harming of ESA-listed species.[8] With respect to endangered plants specifically, Section 9 of the ESA prohibits any person to "remove, cut, dig up, or damage or destroy such [endangered species of plants] in knowing violation of any law or regulation of any State."[9]

Additionally, Section 7(a)(2) of the ESA requires federal agencies to "insure that any action authorized, funded, or carried out by such agency . . . is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of [the critical] habitat of such species."[10] "Action" is broadly defined to include "all activities or programs of any kind authorized, funded, or carried out, in whole or in part" by federal agencies and includes conservation measures, granting permits and licenses, as well as actions that may directly or indirectly cause modifications to the land, water, or air.[11]

While many of the ESA's provisions work to effectuate the conservation goals of the statute, the "heart of the ESA" is the interagency consultation requirements of Section 7 of the ESA.[12] To facilitate compliance with Section 7(a)(2), an "agency shall . . . request" from the U.S. Fish and Wildlife Services ("FWS") information regarding whether any listed species "may be present" in a proposed action area, and if so, the "agency shall conduct a biological assessment" to identify species likely to be affected.[13]

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[1] 16 U.S.C. § 1540(g)(2)(A)(i).
[2] 16 U.S.C. § 1531(a)(1).
[3] *Id.* § 1531(a)(2).
[4] *Id.* § 1531(b).
[5] 16 U.S.C. § 1538(a)(1)(B); *see also* 50 C.F.R. § 17.31(a) (extending the "take" prohibition to threatened species managed by the U.S. Fish and Wildlife Service).
[6] 16 U.S.C. § 1538(a)(2).
[7] 50 C.F.R. § 17.3; *see also Babbitt v. Sweet Home Ch. of Communities for a Great Oregon*, 515 U.S. 687 (1995) (upholding regulatory definition of harm).
[8] *See e.g.*, *Defenders of Wildlife v. Envtl. Prot. Agency*, 882 F.2d 1294, 1300-01 (8th Cir. 1989); *Strahan v. Coxe*, 127 F.3d 155, 163 (1st Cir. 1997).
[9] 16 U.S.C. § 1538(a)(2)(B).
[10] 16 U.S.C. § 1536(a)(2); 50 C.F.R. § 402.14(a).
[11] 50 C.F.R. § 402.02.
[12] *Western Watersheds Project v. Kraayenbrink*, 632 F.3d 472, 495 (9th Cir. 2011); 16 U.S.C. § 1536.
[13] 16 U.S.C. § 1536(c).

The agency must then initiate formal consultation with FWS if a proposed action "may affect" any of those listed species.[14] The "may affect" standard broadly includes "[a]ny possible effect, whether beneficial, benign, adverse or of an undetermined character."[15]

Formal consultation under Section 7(a)(2) results in the preparation of a biological opinion by FWS that determines if the proposed action is likely to jeopardize the continued existence of a listed species or adversely modify the species' critical habitat.[16] If so, the opinion may specify reasonable and prudent alternatives ("RPAs") that avoid such jeopardy.[17] If FWS concludes that the action or the RPAs will not cause jeopardy, but will result in the take of a listed species, FWS will issue an incidental take statement ("ITS") as part of the biological opinion that specifies "the impact, i.e., the amount or extent, of . . . incidental taking" that may occur, and any measures necessary or appropriate to minimize such impact on the listed species.[18] The take of a listed species in compliance with the terms of a valid ITS is not prohibited under Section 9 of the ESA.[19] However, the issuance of an ITS serves several important purposes over time, one being that the thresholds and measures contained in an ITS ensure that, as a project is implemented, it does not have greater impacts on a species than originally anticipated. Specifically, regulations require consultation to be reinitiated if "the amount or extent of taking specified in the incidental take statement is exceeded,"[20] serving as "a check on the agency's original decision that the incidental take of listed species resulting from the proposed action will not jeopardize the continued existence of the species."[21]

II. FACTUAL BACKGROUND

A. Granting the Proposed Aquifer Exemption Poses Threats to Numerous ESA-Listed Species

The operation and expansion of Class II injection wells in the proposed aquifer exemption area will clearly result in potentially negative impacts on myriad ESA-listed species found on and nearby the exemption area. Activities accompanying the expansion of the injection wells, such as clearing, grading, drilling, injection and disposal of produced water will increase traffic and noise, as well as air and water pollution, resulting in negative impacts to these species. Granting the aquifer exemption permanently sacrifices the aquifer to the whims of the oil industry in operating and expanding the facility, clearing the way for this expansion and injection to occur.[22]

The species that is most likely to suffer direct impacts by the aquifer exemption approval is the federally endangered Pismo clarkia (*Clarkia speciosa* ssp. *immaculata*), whose several populations exist within the boundaries of the proposed aquifer exemption area, as confirmed by population maps in FWS's most recent five-year review of the highly imperiled flower.[23] (*See* Figure 1 for overlap of Pismo clarkia

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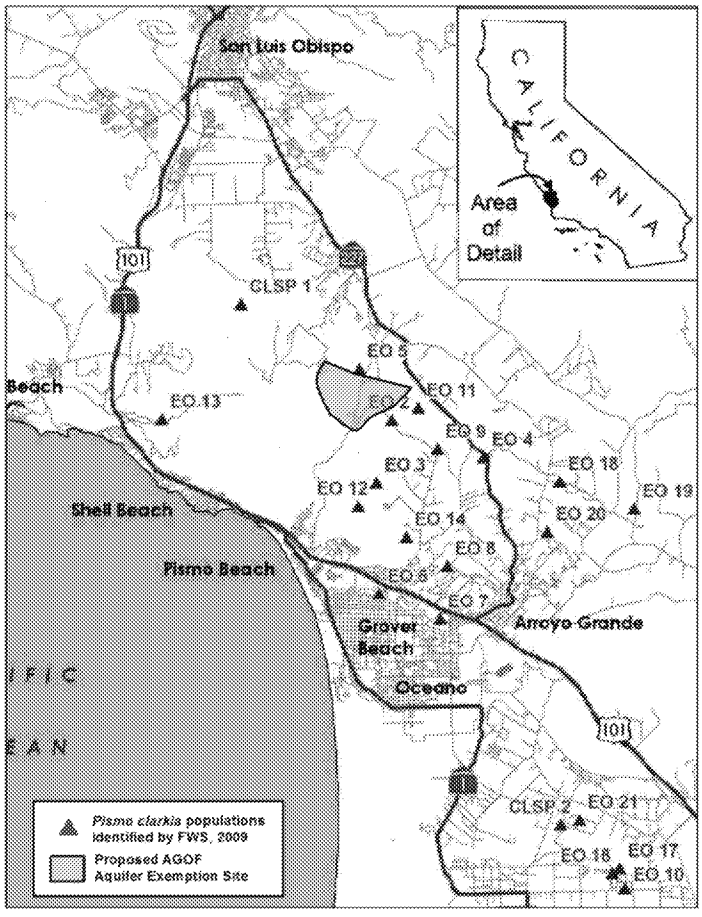
[14] 50 C.F.R. § 402.14(a).
[15] 51 Fed. Reg. 19,926 (June 3, 1986).
[16] 16 U.S.C. § 1536(b).
[17] 16 U.S.C. § 1536(b); 50 C.F.R. 402.14(h)(3).
[18] 50 C.F.R. § 402.14(h)(3), (i).
[19] 16 U.S.C. §§ 1536(b)(4), (o)(2); 50 C.F.R. § 402.14(i)(5).
[20] 50 C.F.R. § 402.16(a).
[21] *Ctr. for Biological Diversity v. Salazar*, 695 F.3d 893, 911 (9th Cir. 2012) (*quoting Natural Res. Def. Council, Inc. v. Evans*, 279 F. Supp. 2d 1129, 1182 (N.D. Cal. 2003)).
[22] *See, e.g.,* Sneed, David, "Oil Company Plans to Drill 481 New Wells at Price Canyon Oil Field," *San Luis Obispo Tribune* (March 26, 2016) ("The first step is to get approval from the EPA to expand an area within the oil field into which wastewater containing brine and other liquid byproducts of the oil production process can be injected. The company wants to triple the size of this injection area and says this expansion is crucial to its growth plans."), http://www.sanluisobispo.com/news/local/article68494287.html#storylink=cpy.
[23] U.S. Fish and Wildlife Service, "Clarkia speciosa subsp. immaculate (Pismo Clarkia) – 5-Year Review: Summary and Evaluation" (2009), 5, http://ecos.fws.gov/docs/five_year_review/doc2547.pdf [hereinafter "FWS Pismo Clarkia Review"].

populations and the proposed aquifer exemption site.) Further, the existence of Pismo clarkia populations in the AGOF has been repeatedly confirmed in numerous AGOF environmental documents: the 2005 Final Environmental Impact Statement for the Phase IV project ("Phase IV FEIR"),[24] the 2012 Initial Study for the Phase V project ("Phase V Initial Study"),[25] the 2013 Biological Resources Assessment Report for the Phase V project ("Phase V BRAR"),[26] and the 2015 Sensitive Plant Survey Report for the AGOF Phase IV EIR Area ("Phase V Plant Survey").[27] Critically, the Phase V Initial Study stated that the impact of Phase V operations would be "potentially significant" on the "loss of unique or special status species in their habitats" which includes the Pismo clarkia.[28] Overall, granting the aquifer exemption may both directly destroy the highly imperiled flower's populations and impact its habitat so as to threaten its overall existence.

Figure 1. Intersection of Pismo clarkia populations in San Luis Obispo and Proposed AGOF Aquifer Exemption Site



Source: FWS 5-Year Review of Pismo Clarkia (2009);DOGGR map of Proposed Aquifer Exemption Site (2016).

Additionally, as the proposed aquifer exemption area encompasses a significant portion of Pismo Creek, and FMOG disposes of filtered wastewater into the creek, several ESA-listed species known to live in the water body—either within the boundaries of the aquifer exemption area or downstream—may be impacted should the exemption be granted. Specifically, AGOF operations that use the produced water from the aquifer, filter the water, and finally release such water into Pismo Creek will adversely affect the critical habitat of the federally endangered Tidewater goby (*Eucyclogobius nerberryi*) and the federally threatened South-Central Coast Steel Trout (*Oncorhynchus mykiss*) and California red-legged frog (*Rana aurora draytonii*) occurring in Pismo Creek either within the boundaries of the exemption area or downstream. Significantly, FWS in a response letter

[24] County of San Luis Obispo, "Final Plains Exploration and Production Phase IV Development Plan – Environenmental Impact Report" (2004), http://www.slocounty.ca.gov/Assets/PL/environmental/plains/Historical+Documents/2004+-+Phase+IV+EIR/phpEIR2004.pdf [hereinafter "Phase IV FEIR"].

[25] County of San Luis Opisbo Department of Planning and Building, "Initial Study re: Plains Exploration & Production – Phase V Oil Field Expansion Conditional Use Permit – ED 12 083 (DRC 2012-00035)," 14-15, http://www.slocounty.ca.gov/Assets/PL/environmental/plains/Environmental/initialstudy.pdf [hereinafter "Phase V Initial Study"].

[26] URS, "Biological Resources Assessment Report for the Phase V Development of the Arroyo Grande Oil Field, prepared for Freeport-McMoRan Oil & Gas" (2013), http://www.slocounty.ca.gov/Assets/PL/environmental/plains/Planning /Applicant+Submittals/Bio+Report+URS_12-13.pdf.

[27] Letter from Arcadis to Firma, "Subject: 2015 Sensitive Plant Survey Report, Freeport McMoRan Arroyo Grande Oilfield Phase IV EIR Area," dated Sep. 22, 2015.

[28] Phase V Initial Study, at 13.

recommending ESA consultation for Project V expansion clearly identified this potential negative impact on critical habitat and the overall populations of these three species for Phase V of the project.[29]

Finally, granting the aquifer exemption will affect numerous other federally-listed species occurring near the exemption site, due to the operation and expansion of injection wells themselves, the parallel operation and expansion of oil-producing wells dependent on the existence of such injection wells, and the impact of these operations on the Pismo Creek and other water bodies downstream. Specifically, the environmental documents prepared for Phase IV and Phase V of the AGOF project identify numerous federally-listed species potentially impacted by AGOF operations. Given that the site for the aquifer exemption is within the boundaries of the larger AGOF site and has, as mentioned above, impacts on land and water beyond the exemption area, it is common sense that the impacts of the aquifer exemption decision may potentially affect the myriad of already identified species—triggering the requirement that the EPA perform Section 7 consultation. As an initial matter, the Phase IV FEIR, the Phase V Initial Study, and the FWS letter with respect to Phase V, collectively identified the following federally-listed species potentially impacted by the project activities (in addition to the species discussed above): Chorro creek bog thistle (*Cirsium fontinale* var. *obispoense*), Gambel's watercress (*Rorippa gambellii*), Indian Knob mountain balm (*Eriodictyon altissimum*), La Graciosa thistle (*Cirsium loncholepis*), Marsh sandwort (*Arenaria paludicola*), Morro Manzanita (*Arctostaphylos morroensis*), Nimpomo Mesa Lupine (*Lupinus nipomensis*), Moro shoulderband snail (*Helminthoglypta walkeriana*), and species occurring in the Pismo State Beach area including the Western snowy plover (*Charadrius alexandrinus nivosus*), California least tern (*Sterna antillarum browni*), Brown pelican (*Pelecanus occidentalis*), and Southern Sea Otter (*Enhydra lutris nereis*). Moreover, these environmental documents identify numerous federal species of concerns potentially impacted by the project activities. (*See* Exhibit A for list of potentially impacted special-status species excerpted from the Phase IV FEIR.) Overall, that the scope of species that are either federally-listed or of federal special concern impacted by the aquifer exemption site has not been examined is clear reason for the EPA to engage in Section 7 consultation and develop a biological opinion for the project actions.

B. Pismo clarkia (*Clarkia speciosa* ssp. *immaculata*)

While numerous federally-listed species will potentially be impacted by granting the aquifer exemption, the Pismo clarkia is of special concern because it has been confirmed to occur on the aquifer exemption site. The Pismo clarkia (*Clarkia speciosa* ssp. *immaculata*) was listed as a federally endangered species under the ESA in 1994.[30] Under state law, the Pismo clarkia was also classified as a rare species under the California Native Plant Protection Act ("NPPA") in 1978.[31] In addition, the flower has been classified as extremely rare by the California National Plant Society ("CNPS").[32] An annual herb, the Pismo clarkia grows up to 20-inches tall and blooms fan-shaped flowers that are white or cream-colored at the base streaking into pinkish or reddish-lavender at the tips.[33]

The known distribution of the species ranges from San Luis Obispo south to the Nipomo Mesa area, an area approximately 14 miles long by 7 miles wide.[34] The species occurs in pockets of dry sandy

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[29] Letter from U.S. Fish and Wildlife Service to John McKenzie, County of San Luios Obispo, "Subject: Notice of Preparation of a Draft Environmental Impact Report for the Plains Exploration & Production Phase V Oil Expansion Project (DRC2012-00035), San Luis Obispo County, California" (Dated Dec. 27, 2012),

[30] 59 Fed. Reg. 64613 (December 15, 1994).

[31] *See* California State Dept of Fish and Wildlife, "State and Federally Listed Endangered, Threatened, and Rare Plants of California" (last updated April 2016), https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=109390&inline.

[32] CNPS, List 1B, RED 3-3-3.

[33] FWS Pismo Clarkia Review, at 4.

[34] *Id.* at 5.

soils within grassy openings in chaparral and oak woodlands.[35] Due to the patchy distribution of these openings, the Pismo clarkia's populations are fragmented by nature.[36]

In the FWS's 2009 five-year status review on the species, as required by Section 4(c)(2) of the ESA, there were 17 populations of the Pismo clarkia presumed to be extant[37] (*See* Figure 1 to cross-reference populations with the aquifer exemption area). Since the flower's listing in 1994, it is known that at least five populations of the species have been extirpated.[38] As required by the ESA, the FWS is currently undergoing the next five-year status review of the endangered flower, initiated in 2013.[39] Overall, FWS has concluded that the priority to recover the Pismo clarkia is very high, as the subspecies faces a high degree of threat.[40]

The perilous status of the species is primarily driven by the continued threat from construction and other development projects in areas where the species occurs. Development has been the overriding cause of the loss of all or part of five known populations of this species since listing, and, in 2009, affected or continued to threaten nine additional populations in part or in whole.[41] Furthermore, development was found to eliminate habitat that supports populations of pollinators and seed dispersal vectors and habitat that contains a seedbank, in cases where there is no germination in a given year when surveys are conducted.[42]

The Pismo clarkia
© Aaron Schusteff. Artist's permission obtained.

In addition to direct habitat loss, habitat fragmentation driven by development also severely affects the persistence of the flower's populations within such fragments. As infrastructure, commercial, and residential development continue to rapidly increase within areas in close proximity to existing and potential Pismo clarkia populations, these developments have also occurred *between* existing populations which may have increased their isolation from each other.[43] While fragmentation does not necessarily lead to the extinction of a species within a habitat patch, small populations in small habitat patches have an increased likelihood of extinction and are increasingly affected by their surroundings.[44] Development eliminates adjacent suitable habitat that otherwise would allow for natural population expansion and movement as suitable microhabitats shift in the landscape.[45] Habitat fragmentation has also been found to lead to a decrease in pollination and reduced

[35] 59 Fed. Reg. 61614 (December 15, 1994).
[36] FWS Pismo Clarkia Review, at 5.
[37] *Id.* Fourteen of the populations presumed to be extant were documented by the California Natural Diversity Database ("CNDDB"), which is maintained by the California Department of Fish & Wildlife.
[38] *Id.*
[39] 78 Fed. Reg. 19510-19514 (April 1, 2013) (*Initiation of 5-Year Review of 56 Species in California and Nevada*).
[40] *Id.* at 3. The recovery priority number for the Pismo clarkia is 3C based on a 1-18 ranking system where 1 is the highest-ranked recovery priority and 18 is the lowest. 48 Fed. Reg. 43098 (Sep. 21, 1983) (Endangered and Threatened Species Listing and Recovery Priority Guidelines).
[41] FWS Pismo Clarkia Review, at 6.
[42] *Id.*; California Department of Fish and Game (now California Department of Fish and Wildlife), California Natural Diversity Database, Rare find records for *Clarkia speciosa* ssp. *immaculata*. (2006).
[43] FWS Pismo Clarkia Review, at 7; USDA National Agricultural Image Program, Aerial photography data/imagery of San Luis Obispo County (2005); L. Althouse, Personal communication: Status, threats, and information on *Clarkia speciosa* ssp. *immaculate* (2006).
[44] FWS Pismo Clarkia Review at 7; K. Draeger, Mapping habitat area of *Clarkia speciosa* ssp. *immaculata* (Pismo clarkia), to the Environmental Division of the San Luis Obispo Department of Planning and Building (2002).
[45] FWS Pismo Clarkia Review at 7.

reproductive success due to the decreased visitation from pollinators to small and isolated populations.[46]

Development aside, the 2009 FWS status review of the Pismo clarkia highlights the inadequacy of both state and federal regulatory mechanisms to protect against threats to the highly imperiled flower's existence. Despite the ESA's Section 7 consultation requirement, no formal consultations had been conducted on effects on the Pismo clarkia since its listing in 1994 to 2009, the most recent date for which the FWS has completed a study on the species.[47] This letter seeks to compel EPA to comply with the ESA mandate as required for the AGOF aquifer exemption request.

III. THE EPA MUST UNDERGO SECTION 7 ESA CONSULTATION PRIOR TO EXEMPTION APPROVAL

The EPA's potential action to grant the aquifer exemption clearly triggers the agency's requirement to undergo interagency consultation under Section 7 of the ESA. As explained above, all federal agencies are required to consult whenever they take an "action" that "may affect" ESA-listed species or their critical habitat.[48] The "may affect" standard includes "[a]ny possible effect, whether beneficial, benign, adverse or of an undetermined character."[49] Here, the EPA's approval of the aquifer exemption clearly constitutes a federal "action" that meets the broad "may affect" threshold under the ESA and its implementing regulations.[50] The EPA's grant of the aquifer exemption on AGOF is a federal action that will permit FMOG to expand and operate wastewater injection wells in an area documented to contain known populations of several ESA-listed species, including, but not limited to, the federally endangered Pismo clarkia. In addition, the operation and expansion of wastewater injection wells is understood to impact water in the Pismo Creek, potentially affecting the habitat and populations of the federally endangered Tidewater goby and the federally threatened South-Central steelhead trout and the California red-legged frog, whose populations are documented to occur in the Creek whether within the boundaries of the aquifer exemption site or downstream. Separately, as articulated in environmental documents prepared for Phase IV and V of the AGOF projects, there are numerous other species that are either federally listed or of special federal concern that are potentially impacted by these projects and, by the nature of the aquifer exemption area lying inside the greater AGOF project site, the proposed aquifer exemption operations as well. Specifically, granting the aquifer exemption may affect these other federally-listed species occurring on or near the exemption site, due to the operation and expansion of injection wells themselves, the parallel operation and expansion of oil-producing wells dependent on the existence of such injection wells, and the impact of these operations on the Pismo Creek and other bodies of water downstream. Therefore, these collective potential impacts of EPA's approval of the aquifer exemption meet the standards affirmatively triggering the agency's legal obligation to initiate and complete Section 7 consultation to ensure that authorizing the exemption will not jeopardize any listed species or adversely modify their critical habitat.

The EPA's failure to consult prior to approving the aquifer exemption would violate the procedural requirements of Section 7 of the ESA. By failing to engage in consultation, the EPA would also be in violation of its substantive duty to ensure that its actions do not jeopardize the continued existence of threatened and endangered species found within and near the zone of the proposed Class II injection wells under the aquifer exemption. These species include, but are not limited to, the Pismo

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[46] *Id.*; C. Kearns and D. Inouye, "Pollinators, flowering plants, and conservation biology: much remains to be learned about pollinators and plants," *BioScience* 47(5):297-307 (1997).

[47] FWS Pismo Clarkia Review at 9.

[48] 16 U.S.C. § 1536(a)(2); 50 C.F.R. § 402.14(a) ("Each Federal agency shall review its actions at the earliest possible time to determine whether any action may affect listed species or critical habitat. If such a determination is made, formal consultation is required…"); *see Wash. Toxics Coalition v. EPA*, 413 F.3d 1024, 1032 (9th Cir. 2005); Defenders of Wildlife v. Administration, 882 F.2d 1294 (8th Cir. 1989).

[49] 51 Fed. Reg. 19,926 (June 3, 1986).

[50] 50 C.F.R. § 402.02.

clarkia (*Clarkia speciosa* ssp. *immaculata*), Tidewater goby (*Eucyclogobius nerberryi*), South-Central Coast steel trout (*Oncorhynchus mykiss*), California red-legged frog (*Rana aurora draytonii*), the Chorro creek bog thistle (*Cirsium fontinale* var. *obispoense*), Gambel's watercress (*Rorippa gambellii*), Indian Knob mountain balm (*Eriodictyon altissimum*), La Graciosa thistle (*Cirsium loncholepis*), Marsh sandwort (*Arenaria paludicola*), Morro Manzanita (*Arctostaphylos morroensis*), Nimpomo Mesa Lupine (*Lupinus nipomensis*), Moro shoulderband snail (*Helminthoglypta walkeriana*), and species occurring in the Pismo State Beach area including the Western snowy plover (*Charadrius alexandrinus nivosus*), California least tern (*Sterna antillarum browni*), Brown pelican (*Pelecanus occidentalis*), and Southern Sea Otter (*Enhydra lutris nereis*).

IV. Conclusion

As an initial matter, the EPA should immediately deny DOGGR's request for the aquifer exemption because the injection wells undoubtedly fail to meet the Safe Drinking Water Act or California Public Resources Code criteria for aquifer exemptions.[51] However, should the EPA consider granting the exemption, the EPA is statutorily mandated to examine the environmental impacts of its decision under both NEPA and the ESA. As discussed in this letter, the Center urges the EPA to engage in consultation under Section 7 of the ESA so as not to jeopardize the continued existence of several ESA-listed species potentially affected by affirmatively granting the aquifer exemption. If EPA approves the aquifer exemption without complying with Section 7 of the ESA, the Center will be forced to take legal action to enforce compliance.[52]

Please contact me if you have any questions or would like to discuss this matter further.

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[51] 40 C.F.R. § 146.4; California Pub. Resources Code §3131.
[52] 16 U.S.C. § 1540(g)(1)(A).

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Exhibit A

Excerpts from Phase IV FEIS of Special Status Species Potentially Impacted By AGOF Project

[*See attached.*]

Table 5.5-2
Definitions of Special-Status Plant Species

Special-Status Plant Species
➢ Plants listed or proposed for listing as threatened or endangered under the Federal Endangered Species Act (50 CFR 17.12 for listed plants and various notices in the Federal Register for proposed species).
➢ Plants that are candidates for possible future listing as threatened or endangered under the Federal Endangered Species Act (Federal Register Vol. 67, No. 114, pp. 40657-4067, June 13, 2002).
➢ Plants that meet the definitions of rare or endangered species under the CEQA (*State CEQA Guidelines,* Section 15380).
➢ Plants considered by the CNPS to be "rare, threatened, or endangered" in California (Lists 1B and 2 in California Native Plant Society, 2001).
➢ Plants listed by CNPS as plants about which we need more information and plants of limited distribution (Lists 3 and 4 in California Native Plant Society, 2001).
➢ Plants listed or proposed for listing by the State of California as threatened or endangered under the California Endangered Species Act (14 CCR 670.5).
➢ Plants listed under the California Native Plant Protection Act (California Fish and Game Code 1900 et seq.).
➢ Plants considered sensitive by other Federal agencies (i.e., U.S. Forest Service, Bureau of Land Management), state and local agencies or jurisdictions.
➢ Plants considered sensitive or unique by the scientific community or occurring at the limits of its natural range (*State CEQA Guidelines*, Appendix G).

Table 5.5-3
Special-Status Plant Species Potentially Occurring in the Project Area

Common Name *Scientific Name*	Status	Habitat	Habitat Present/ Absent	Nearest Known Location
Beach spectaclepod *Dithyrea maritima*	FSC / ST / List 1B	Coastal dunes, coastal scrub	A	Pismo State Beach, 1.5 miles south of Pismo Beach, 3 miles west of Arroyo Grande (CNDDB, 2003).
Black-flowered figwort * *Scrophularia atrata*	FSC / -- / List 1B	Closed-cone coniferous forest, chaparral, coastal dunes, coastal scrub, riparian scrub	P	Species observed on-site during 2003 botanical surveys.
Blochman's dudleya *Dudleya blochmaniae* ssp. *blochmaniae*	-- / -- / List 1B	Coastal scrub, coastal bluff scrub, valley and foothill grassland	P	Froom Ranch, west of intersection of Los Osos Valley Road and U.S. 101, just outside city limits of San Luis Obispo (CNDDB, 2003).
Brewer's spineflower *Chorizanthe breweri*	-- / -- / List 1B	Chaparral, cismontane woodland, coastal scrub, closed-cone coniferous forest	P	Price Canyon Road about 1 mile southwest of Highway 227, south of San Luis Obispo (CNDDB, 2003)
Chorro creek bog thistle *Cirsium fontinale* var. *obispoense*	FE/ SE / List 1B	Chaparral, cismontane woodland, and serpentine seeps	P	Froom Ranch, west of Los Osos Valley Road, South of San Luis Obispo (CNDDB, 2003)

Common Name *Scientific Name*	Status	Habitat	Habitat Present/ Absent	Nearest Known Location
Congdon's tarplant *Centromadia parryi* ssp. *congdonii*	FSC / -- / List 1B	Valley and foothill grassland	P	Laguna Lake, near San Luis Obispo (CNDDB, 2003)
Fuzzy prickly phlox* *Leptodactylon californicum* ssp. *tomentosum*	-- / -- / List 4	Chaparral, coastal dunes and scrub	P	Species observed during botanical surveys conducted on-site (Levine Fricke, 2002)
Gambel's watercress *Rorippa gambellii*	FE / ST / List 1B	Freshwater and brackish marshes	A	Black Canyon, Oceano (CNDDB, 2003).
Hoover's bent grass * *Agrostis hooveri*	-- / -- / List 1B	Chaparral and grassland	P	Species observed during botanical surveys conducted on-site (Levine Fricke, 2002)
Indian knob mountainbalm *Eriodictyon altissimum*	FE / SE / List 1B	Chaparral, cismontane woodland	P	Indian knob, about 4 miles north of Pismo and 3 miles south of San Luis Obispo (CNDDB, 2003).
Jones's layia *Layia jonesii*	FSC / -- / List 1B	Chaparral, valley foothill grassland	P	1.75 mile southwest of San Luis Obispo (CNDDB, 2003)
La Graciosa thistle *Cirsium loncholepis*	FE / ST / List 1B	Coastal dunes, brackish marshes and riparian scrub	A	Callendar dunes, south of Oceano (CNDDB, 2003).
Leafy tarplant *Deinandra increscens* ssp. *foliosa*	-- / -- / List 1B	Valley and foothill grassland	P	Immediately NE of Lopez Reservoir (CNDDB, 2003)
Marsh sandwort *Arenaria paludicola*	FE / SE / List 1B	Marshes and swamps	A	Pismo Beach, San Luis Obispo County (CNDDB, 2003)
Morro manzanita *Arctostaphylos morroensis*	FT / -- / List 1B	Chaparral, cismontane woodland, coastal dunes, coastal scrub	P	Edge of Prefumo Canyon Road in Prefumo Canyon, Southwest of San Luis Obispo (CNDDB, 2003)
Nipomo Mesa lupine *Lupinus nipomensis*	FE / SE / List 1B	Coastal dunes	A	Oceano dunes (CNDDB, 2003)
Obispo Indian paintbrush *Castilleja densiflora* ssp. *obispoensis*	-- / -- / List 1B	Valley and foothill grassland	P	See Canyon, San Luis Obispo (CNDDB, 2003)
Pecho manzanita *Arctostaphylos pechoensis*	FSC / -- / List 1B	Closed cone coniferous forest, chaparral, and coastal scrub	P	Davis Canyon, Irish Hills (CNDDB, 2003)
Pismo clarkia * *Clarkia speciosa* ssp. *immaculata*	FE / SR / List 1B	Chaparral, cismontane woodland, valley and foothill grassland	P	Species observed on-site during 2003 botanical surveys.
Saint's Daisy* *Erigeron sanctarum*	-- / -- / List 4	Chaparral, cismontane woodland and coastal scrub	P	Species observed during botanical surveys conducted on-site (Levine Fricke, 2002)
San Luis mariposa lily *Calochortus obispoensis*	-- / -- / List 1B	Chaparral, coastal scrub, valley and foothill grassland	P	Western ridge of Indian Knob, about 4 miles north of Pismo Beach (CNDDB, 2003)

Common Name *Scientific Name*	Status	Habitat	Habitat Present/ Absent	Nearest Known Location
San Luis Obispo County lupine *Lupinus ludovicianus*	FSC / -- / List 1B	Chaparral, cismontane woodland	P	Hills north of Price Canyon, north of Pismo Creek, NNE of Pismo Beach (CNDDB, 2003).
Santa Lucia manzanita *Arctostaphylos luciana*	FSC / -- / List 1B	Chaparral	P	1.75 miles NNE of Slide Hill, East of San Luis Obispo (CNDDB, 2003)
Santa Margarita manzanita *Arctostaphylos pilosula*	FSC / -- / List 1B	Closed-cone coniferous forest, and chaparral.	P	Vicinity of Indian Knob, about 3.5 miles NNW of Pismo Beach, South of San Luis Obispo (CNDDB, 2003)
Surf thistle *Cirsium rhothophilum*	FSC / ST / List 1B	Coastal dunes, costal bluff scrub	A	Pismo Beach (CNDDB, 2003)
Well's manzanita * *Arctostaphylos wellsii*	-- / -- / List 1B	Chaparral, closed-cone coniferous forest	P	Species observed during botanical surveys conducted on site (Padre, 2003)

Status Codes:

FE	Federal Endangered (U.S. Fish and Wildlife Service [USFWS])
FT	Federal Threatened (USFWS)
List 1B	Plants rare, threatened, or endangered in California and elsewhere (CNPS)
List 4	"Watch list" for plants of limited distribution (CNPS)
SE	State Endangered (CDFG)
ST	State Threatened (CDFG)
SR	State Rare (CDFG)
*	Species observed during recent surveys (Padre 2003, Levine Fricke 2002)

To determine the presence and/or absence of the special-status plant species listed in Table 5.5-3 above, a focused botanical survey of the project site was conducted in May 1 and 8, 2003, during the typical flowering period for the majority of the species listed. In addition, supplemental biological surveys were conducted in August and September 2003 and resulted in the identification of several other "late-blooming" species. For a complete listing of vascular flora observed within the project site, please refer to Appendix E.

Special-status plant species that could potentially occur within the project site based on known occurrences within the vicinity of Price Canyon or adjacent portions of San Luis Obispo County included Blochman's dudleya, Brewer's spineflower, Jones' layia, Obispo Indian paintbrush, San Luis mariposa lily, Chorro creek bog thistle, Congdon's tarplant, and leafy tarplant. However, none of these species were observed during the 2003 botanical surveys conducted within the project area or during past botanical surveys conducted by Levine Fricke in 2000, 2002 and SAIC in 1994.

In addition, Well's manzanita was the only species of *Arctostaphylos* identified in the project area and represents the dominant component of the Central maritime chaparral habitat occurring within the site. Therefore, Morro manzanita, Santa Margarita manzanita, Pecho manzanita, and Santa Lucia manzanita are not expected to occur within the project site. Moreover, special-status plant species associated with specific habitats types such as surf thistle, beach spectaclepod, La Graciosa thistle, Nipomo Mesa lupine, Gambel's watercress, and marsh sandwort were not observed during surveys and are not expected to occur within the site due to the lack of suitable habitat (i.e., require coastal foredune and marsh habitat, which is not present within the project site).

Table 5.5-4
Definitions of Special-Status Wildlife Species

Special-Status Animal Species
➢ Animals listed or proposed for listing as threatened or endangered under the Federal Endangered Species Act (50 CFR 17.11 for listed animals and various notices in the Federal Register for proposed species).
➢ Animals that are candidates for possible future listing as threatened or endangered under the Federal Endangered Species Act (Federal Register Vol. 67, No. 114, pp. 40657-4067, June 13, 2002).
➢ Animals that meet the definitions of rare or endangered species under the CEQA (*State CEQA Guidelines*, Section 15380).
➢ Animals listed or proposed for listing by the State of California as threatened and endangered under the California Endangered Species Act (14 CCR 670.5).
➢ Animal species of special concern to the CDFG (Remsen, 1978 for birds; Williams, 1986 for mammals).
➢ Animal species that are fully protected in California (California Fish and Game Code, Section 3511 [birds], 4700 [mammals], and 5050 [reptiles and amphibians]).

Table 5.5-5
Special-Status Wildlife Species Potentially Occurring within the Project Area

Common Name *Scientific Name*	Status	Nearest Known Occurrence(s)
Invertebrates		
Morro shoulderband snail *Helminthoglypta walkeriana*	FE	Between Calle Joaquin Road and Highway 101, San Luis Obispo (CNDDB, 2003)
Monarch butterfly *Danaus plexippus*	SA	Pismo Dunes State Vehicular Recreation Area District Office, Grover Beach (CNDDB, 2003)
Fish		
South-central California coast steelhead *Oncorhynchus mykiss irideus*	FT, CSC	Pismo Creek and West Corral de Piedra Creek, Price Canyon (CNDDB, 2003)
Tidewater goby *Eucyclogobius newberryi*	FE, CSC	Pismo Creek (from mouth to 1.0 mile upstream), Pismo Beach (CNDDB, 2003)
Reptiles		
California horned lizard *Phrynosoma coronatum frontale*	FSC, CSC	El Chorro Regional Park, San Luis Obispo County (CNDDB, 2003); Guadalupe Dunes, San Luis Obispo County (Unocal, 2000)
Southwestern pond turtle *Clemmys marmorata pallida*	FSC, CSC	Pismo Creek (Morro Group, 2001)
Two striped garter snake *Thamnophis hammondi*	CSC	Cuyama River, Los Padres National Forest (CNDDB, 2003)
Amphibians		
California tiger salamander *Ambystoma californiense*	FC, CSC	Biddle Regional County Park, Lopez Canyon, southeast of San Luis Obispo (CNDDB, 2003)
California red-legged frog *Rana aurora draytonii*	FT, CSC	Corbett Canyon Creek, Arroyo Grande (CNDDB, 2003)
Birds		
Western snowy plover *Charadrius alexandrinus nivosus*	FT (nesting), CSC (nesting), M	Pismo State Beach (CNDDB, 2003)
California least tern *Sterna antillarum browni*	FE (nesting colony), SE (nesting colony), M	Pismo State Beach (Padre, 2003)

Common Name *Scientific Name*	Status	Nearest Known Occurrence(s)
Brown pelican *Pelecanus occidentalis*	FE (nesting colony), SE (nesting colony), M	Pismo State Beach (Padre, 2003)
Western yellow-billed cuckoo *Coccyzus americanus occidentalis*	SE (nesting) FC (nesting), M	San Luis Obispo. Last documented occurrence was 1921. (CNDDB, 2003)
Cooper's hawk * *Accipiter cooperii*	CSC (nesting), M	Observed during 2003 surveys conducted on-site.
American peregrine falcon * *Falco peregrinus anatum*	FSC (nesting), SE (nesting), FP, M	Observed during 2003 surveys conducted on-site.
Loggerhead shrike *Lanius ludovicianus*	FSC (nesting), CSC (nesting), M	Observed on site during previous survey (ERCO, 1981)
Northern harrier *Circus cyaneus*	CSC (wintering), M	Known from region; nearest occurrence unknown
Sharp-shinned hawk *Accipiter striatus*	CSC (nesting), M	Known from region; nearest occurrence unknown
Southwestern willow flycatcher *Empidonax trailli extimus*	SE (nesting), M	Known from region; nearest occurrence unknown
Yellow warbler *Dendroica petechia*	CSC (nesting), M	Recorded at Pismo Beach and Oceano (SAIC, 1994)
	Mammals	
San Diego desert woodrat *Neotoma lepida intermedia*	CSC	Green Peak, approximately 1.5 miles southeast of Diablo Canyon (CNDDB, 2003)
Southern sea otter *Enhydra lutris nereis*	FT, FP	Pismo State Beach (Padre, 2003)

Status Codes:

FE	Federal Endangered (USFWS)
FT	Federal Threatened (USFWS)
FSC	Federal Species of Special Concern (USFWS)
FC	Federal Candidate Species (USFWS)
SE	State Endangered (CDFG)
ST	State Threatened (CDFG)
CSC	California Species of Special Concern (CDFG)
FP	Fully Protected under California Fish and Game Code
SA	Special animal (CDFG)
M	Protected under the Migratory Bird Treaty Act of 1918
*	Species observed during recent surveys (Padre 2003)

For the purposes of impact analysis, the following briefly presents the legal status and applicable ecological and range information for those special-status wildlife species identified within the proposed impact areas and/or for those that have a high likelihood of occurrence based on the presence of suitable habitat. Special-status wildlife species associated with coastal and/or marine habitats located west of the project area such as the southern sea otter, least tern, western snowy plover, and brown pelican were not observed during surveys and are not expected to occur within the site due to the lack of suitable habitat.

Invertebrates

Morro shoulderband snail (*Helminthoglypta walkeriana*). The Morro shoulderband snail is a Federally endangered species. This species inhabits the accumulated litter and undersides of low shrub branches that exhibit dense, low growth and ample contact to the ground, particularly mock heather (*Ericameria ericoides*), seaside golden yarrow (*Eriophyllum staechadifolium*), deerweed (*Lotus scoparius*), and dune almond (*Prunus fasciculata* var. *punctata*) (USFWS, 2003). Based on this observation, favorable

October 11, 2016

Via electronic mail and U.S. mail to:

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Re: August 18, 2016 letter from CA DOGGR re: Arroyo Grande Oil Field Aquifer Exemption, Supplemental Information

Dear Mr. Albright, Mr. Montgomery, and Mr. Kobelski,

I am writing in response to the California Department of Conservation, Division of Oil, Gas, and Geothermal Resources (DOGGR) supplemental data provided to you on August 18, 2016 regarding the Arroyo Grande Oil Field ("AGOF") aquifer exemption ("Response"). This

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data was provided in response to a request for additional data from the United States Environmental Protection Agency ("EPA") to DOGGR and the field's operator, Freeport McMoRan Oil & Gas ("FMOG") on April 19, 2016.

The Center for Biological Diversity ("Center") has reviewed DOGGR's Response, and still does not believe it adequately addresses the data requested by EPA or the issues raised in the Center's previous comments on the proposed exemption to DOGGR and to EPA. Instead, DOGGR and FMOG continue to insist that the agencies trust its inadequate support for its assertion that this aquifer meets both federal and state criteria. Because DOGGR and FMOG are either unable or unwilling to provide the necessary information, we urge EPA to deny this aquifer exemption application.

As we have previously stated, and as the attached letter from Matt Hagemann, P.G., C.Hg. and Rob Hesse, P.G.[1] reiterates, the supplemental information provided by DOGGR still does not demonstrate that the aquifer is hydraulically isolated from nearby water wells. While it adds additional water wells to the capture zone analysis based on new work by Cleath-Harris Geologists, the capture zone analysis still draws conclusions about zonal isolation that are based on assumptions and inferences rather than facts. EPA requested further data to support the AGOF aquifer exemption[2] and DOGGR has responded with suppositions and assertions based on belief rather than evidence.

The Center has previously requested aquifer tests and numeric groundwater models in order to demonstrate the hydrogeology of this and surrounding aquifers. Rather than provide these well-known tests, in response to EPA's request for more information and technical justification regarding the hydraulic regime, DOGGR has merely referred to the inadequate documentation already in the application and publicly available. This is wholly insufficient.

We have raised concerns about this aquifer exemption in numerous comment letters to DOGGR, EPA, and other agencies. Those concerns are not adequately addressed in this Response. Based solely on those previous comments, EPA must deny this aquifer exemption.

In addition to our previous comments, DOGGR's Response raises the specific issues detailed below.

Response Fails to Prove Hydraulic Isolation of the Aquifer

As in the original aquifer exemption application and supplement, DOGGR's Response relies on inadequate data in a vain attempt to justify FMOG's claim that the proposed aquifer exemption is zonally isolated.

The September 29 Hagemann letter details numerous holes in the data DOGGR and FMOG rely on to demonstrate hydraulic isolation. In fact, the Response states as much: in

[1] September 29, 2016 letter from Matt Hagemann, P.G., C.Hg. and Rob C. Hesse, P.G. of SWAPE to Maya Golden-Krasner ("September 29 Hagemann letter").
[2] Letter from Michael Montgomery, US EPA, to Ken Harris, DOGGR (April 19, 2016) ("EPA Request"), p. 2.

response to EPA's request for 3D modeling, DOGGR provides Figure 10 but admits that the modeling is "inferred."[3]

DOGGR's response to EPA contends that the Arroyo Grande Fault Zone serves as a barrier to fluid flow because there is evidence that groundwater is forced upward into the surface flow of the Pismo Creek when it encounters the fault zone. This is based on comparisons of flow and salinity north and south of the fault zone. The possibility of the fault zone halting some fluid flow but allowing some to continue is not considered. Furthermore, Pismo Creek crosses the fault at one location, so assuming that the behavior of the creek is evidence that the fault is a complete seal relies on the assumption that the fault behaves uniformly as a seal along the extent of the proposed exemption boundary. Analysis of the fault at various points along its extent is the only way to definitively prove its sealing status.

The response to EPA goes further to say that fault gouge identified on the "Silva" 1 well mud log in the fault zone is solid evidence of a fault sealing mechanism in the AGFZ.[4] This fault gouge is not discussed in terms of its composition. To confirm that this gouge is evidence of sealing requires information on the grain size of this gouge material and knowledge of its permeability. Otherwise, we are expected to take the word of the Applicant as true without quantitative evidence. Furthermore, evidence of gouge appears to only be based on the one "Silva" 1 well mud log, which is not enough to confirm the ubiquity of gouge material along the fault.

Also, the Response makes the repeated argument that if the fault were not sealing, then we would already see evidence of fluid migration across the fault. High oil saturation south of the AGFZ compared to low oil saturation to the north, hundreds of economic oil wells south of the fault compared to eight uneconomic wells to the north, and a lack of updip hydrocarbon migration across the AGFZ are all cited as evidence of the fault serving as a seal.[5] One issue with this argument is that the mechanisms of oil emplacement and movement are portrayed as equivalent to those for water. A lack of movement of oil does not necessarily preclude the possibility of water migration. Furthermore, perhaps hydrocarbons have not migrated updip across the AGFZ simply because it is updip. Updip motion requires acting against the force of gravity and the state of current reservoir pressures may simply not be enough to overcome that force. It is important to note that the Applicant in its "Hydraulic Analysis for the Arroyo Grande Syncline" concludes that a spillover of injected fluid will not lead to a loss of containment.[6] So, the synclinal structure of the aquifer itself may be responsible for variable oil content across the fault rather than the fault itself, as is inferred from the Applicant's hydraulic analysis. The possibility of spillover may change if injection and fluid extraction dynamics change, however, and relying on the operator to maintain current dynamics is not an acceptable method of protection.

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[3] Response, p. 17.
[4] Response, p. 3.
[5] *Ibid.*
[6] Application, p. 9.

In addition, the Response states that "Buoyance-driven fluid movement is not evident or expected as the heavy oil and water remain interspersed and in emulsion."[7] This seems to directly contradict the assertion that oil would have migrated updip if the aquifer were not contained.

Finally, oil saturations are different to the south versus to the north of the fault. The Response does not state that there is no oil north of the fault. Thus, it cannot be confirmed that even if the fault is halting some fluid motion that is not still allowing some fluid flow. DOGGR admits to this in its response to EPA: "…the Arroyo Grande Fault Zone is an aquiclude and does not transmit water fast enough to provide an appreciable source of water…"[8] It is acknowledged that flow still occurs across the Arroyo Grande Fault Zone, and the assertion of the flow not being appreciable is not quantified and thus not proven correct.

As the September 29 Hagemann letter points out, the data that DOGGR and FMOG rely on to prove containment on the sides of the aquifer not bounded by the Arroyo Grande fault zone do not provide enough evidence to support the hypothesis (because containment is merely a hypothesis and not a fact) that injectate from this oil field does not endanger surrounding underground sources of drinking water ("USDWs"). There are too few well cores to establish a continuous tar seal and the evidence from those core samples demonstrates variability in the tar seal. A 1944 study referenced in the Response for support of the theory of a continuous tar seal actually suggests that the tar seal's structure underground is discontinuous.

The Response admits that "[o]utside of the Arroyo Grande oil field, the water production is from the Edna member."[9] Since it fails to prove that these waters outside the oil field are not in communication with the same formation inside the oil field, EPA must deny this aquifer exemption application.

Capture Zone Analysis Is Inadequate

As demonstrated above, neither FMOG nor DOGGR have data to prove hydraulic isolation of the Edna member, Dollie Sands. The Response includes a capture zone analysis,[10] as required by EPA. The analysis is flawed, however, because it arbitrarily foreshortens the capture zones of at least nine nearby wells, based on those same flawed assumptions about the location of the tar seal and the impermeability of the fault zone. [11] As the September 29 Hagemann letter notes, "this assertion [that the capture zones would end at the oil field boundary] is based on the drilling records of only two old, plugged and abandoned oil wells in this area. There are no other surface drilling records for at least 2,000 feet from well "Jack 1-32."[12]

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[7] Response, p. 10.
[8] Response, p. 14.
[9] Response, p. 17.
[10] Response, p. 12, Figure 7.
[11] *See* Letter from Matt Hagemann, P.G., C. Hg., June 13, 2016 ("June 13 Hagemann letter").
[12] September 29 Hagemann letter, p. 4.

Because the fault boundary is "in the same geologic unit that is tapped by drinking water wells just a few hundred feet to the north," conducting "aquifer tests and numerical modeling[] is critical for protection of the adjacent drinking water wells."[13] What is more, the results of the capture zone analysis raise further concern that the drinking water wells are, in fact, "in communication with the exempted area if the fault is transmissive to flow."[14]

Were it done correctly, the capture zone analysis would show that numerous wells could potentially draw water from the very same aquifer for which FMOG seeks an exemption, as their capture zones overlap with the proposed aquifer exemption boundary.

This aquifer exemption endangers USDWs, a precious and dwindling resource in a future where California can look forward to longer and more severe droughts. Therefore, EPA must deny this aquifer exemption.

EPA and DOGGR Should Declare a Moratorium on Aquifer Exemptions

Finally, the Center continues to urge DOGGR and EPA to stop granting aquifer exemptions due to the fact that the criteria for granting such exemptions are wholly outdated. They fail to account for technologies developed in the last few decades for purifying and desalinating groundwater, or for the state's increased need for water in the wake of severe droughts that will continue to increase in frequency and severity due to anthropogenic climate change.[15]

Earlier this year, Stanford University researchers released a study documenting more freshwater in California's aquifers than previously assumed, but noting that a significant amount of oil and gas activity has occurred within freshwater zones and USDWs.[16] The authors' conclusions included the fact that California does not have complete or current data on its groundwater resources, noting that "[g]roundwater volume estimates in California are uncertain and require additional studies."[17] The authors further noted that "[c]urrent technologies and growing water demands have made water wells deeper than 1,000 ft more common. . . . As deeper groundwater resources become increasingly important, additional studies are needed for evaluating subsurface activities that could contaminate these resources," including "wastewater disposal, CO_2 storage, and enhanced oil/gas recovery. . . ."[18]

In addition, earlier this year, the Government Accounting Office released a report updating its 2014 Report on EPA's management of underground injection. The 2016 Report noted that since the early 2000s, increased domestic oil and gas production has resulted in a

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[13] June 13 Hagemann letter, p. 1.
[14] *Id.* at 2.
[15] *See e.g.*, Williams, Park A. et al., "Contribution of Anthropogenic Warming to California Drought During 2012-2014," *Geophysical Research Letters*, Vol. 42, Issue 16 (Aug. 28, 2015), pp. 6819-6828.
[16] Kang, Mary and Robert B. Jackson, "Salinity of Deep Groundwater in California: Water Quantity, Quality, and Protection," *Proceedings of the National Academy of Sciences* (June 21, 2016), doi: 10.1073/pnas.1600400113, *available at:* http://www.pnas.org/content/early/2016/06/21/1600400113.full.
[17] *Id.* at 1.
[18] *Id.* at 2.

"corresponding increase in wastewater that must be managed, reused, or disposed of properly."[19] At the same time, the growth in production "has also raised concerns about potential effects to human health and the environment, including the potential contamination of underground drinking water sources by injecting wastewater associated with the production of oil and gas."[20] At a minimum, these potential impacts indicate EPA's responsibility to conduct environmental review under the National Environmental Protection Act or an equivalent review prior to approving any exemptions.

Like the 2014 Report, the 2016 Report also found that EPA has failed to completely and consistently oversee and enforce the nation's underground injection control programs. For instance, the 2016 Report found that EPA "does not have the location or supporting document necessary to identify the size and location of all aquifers for which it has approved exemptions from protection under the Act."[21] The Report continued, "[u]ntil it has a complete aquifer exemption database and a way to update it periodically, EPA does not have sufficient information on aquifer exemptions to oversee state and EPA-managed programs and assess whether programs are protecting underground sources of drinking water."[22] Unless and until EPA can effectively protect the nation's groundwater from wastewater and other oil and gas-related injection by, at a minimum, meeting all of the recommendations outlined in the two GAO Reports, EPA should not approve any further exemptions.

Thus, rather than continuing to allow injection and pollution of our state's most precious resource, the state should invest in understanding and protecting it. To preserve California's most important natural resource, EPA must deny this and all other California aquifer exemption applications.

Sincerely,

Maya Golden-Krasner
Climate Staff Attorney
Center for Biological Diversity

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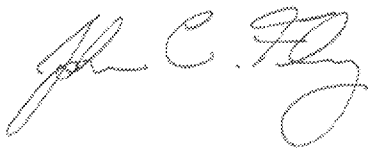
[19] Government Accounting Office (GAO), Drinking Water: EPA Needs to Collect Information and Consistently Conduct Activities to Protect Underground Sources of Drinking Water (February 2016) ("2016 GAO Report"), at 1. See also GAO, Drinking Water: EPA Program to Protect Underground Sources from Injection of Fluids Associated with Oil and Gas Production Needs Improvement (June 2014).
[20] 2016 GAO Report at 1.
[21] *Id.* at 24-25.
[22] *Id.* at 27.



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